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# Montana

## Basin Outlook Report

April 1, 1996

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# Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

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See Attached List

## How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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United States Department of Agriculture  
Natural Resources Conservation Service (formerly the Soil Conservation Service)  
Bozeman, Montana

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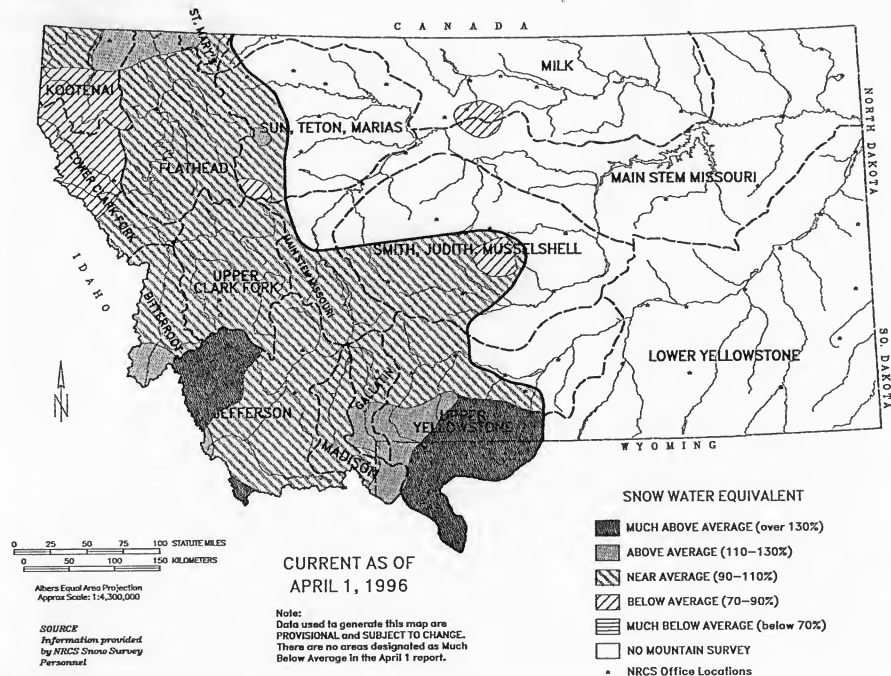
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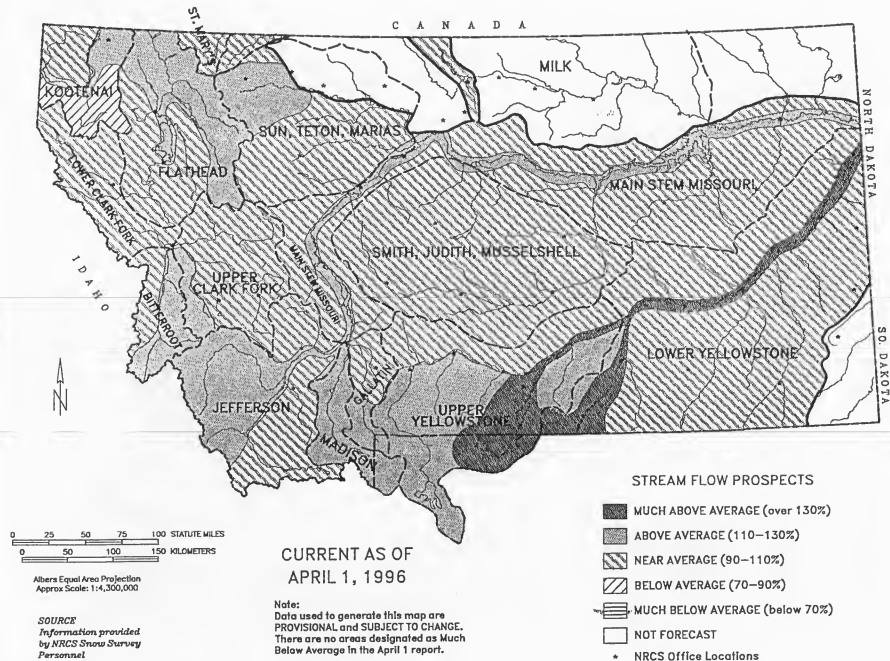
**Yellowstone County**  
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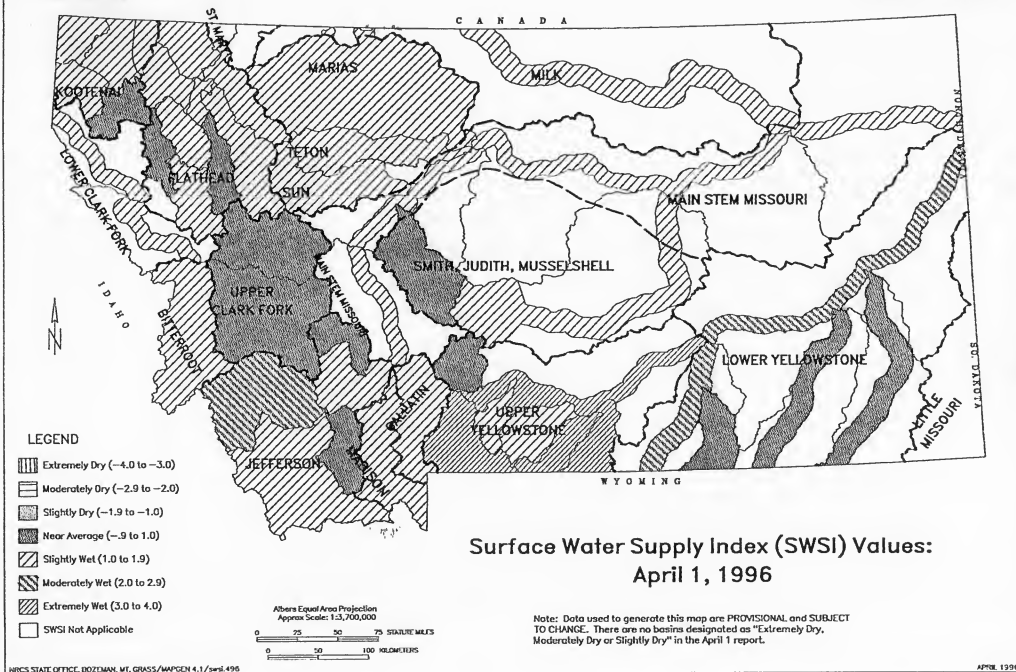
## MOUNTAIN SNOWWATER EQUIVALENT FOR MONTANA

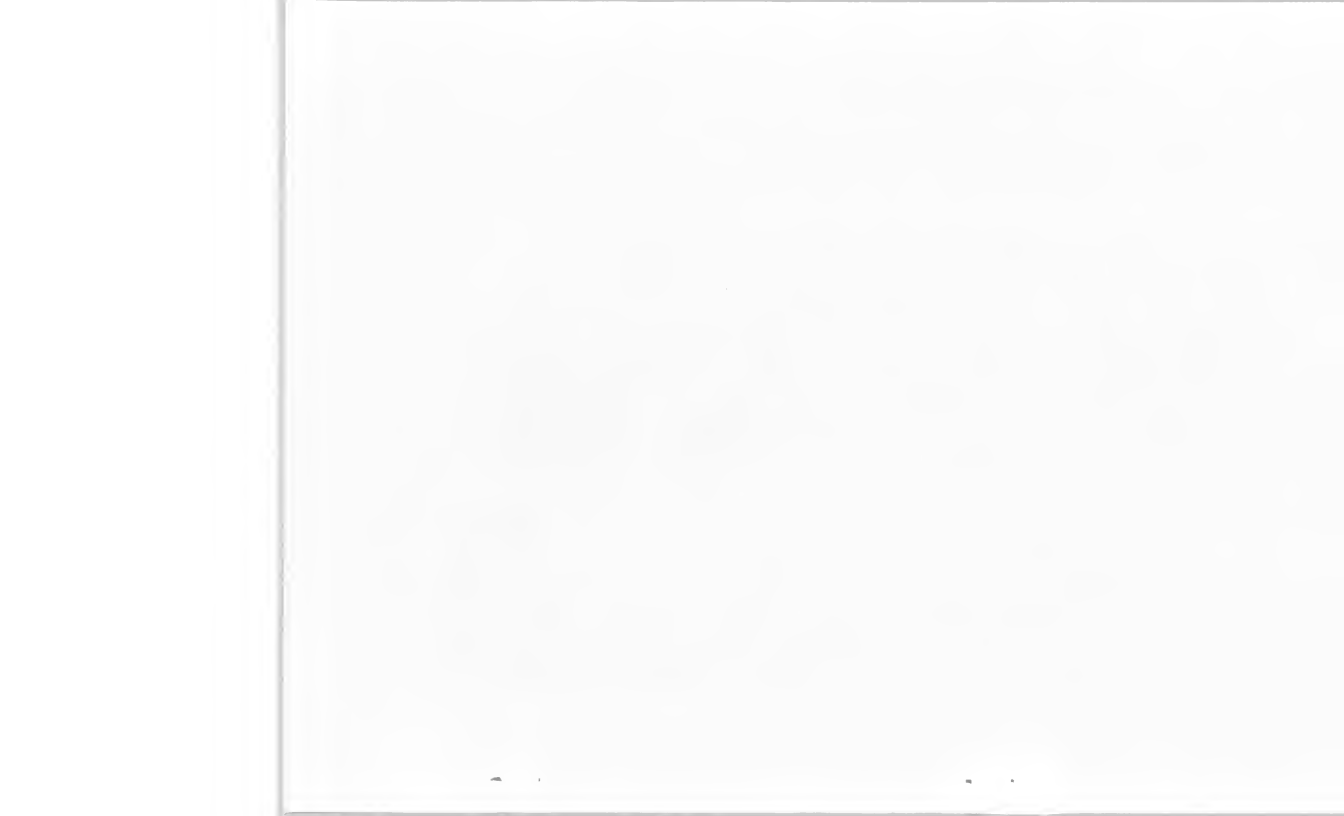


# STREAM FLOW PROSPECTS FOR MONTANA

## Spring and Summer Period









BASIN SUMMARY OF  
SNOW COURSE DATA

APRIL 1996

| SNOW COURSE         | ELEVATION | DATE    | SNOW<br>DEPTH | WATER<br>CONTENT | LAST<br>YEAR | AVERAGE<br>1961-90 |
|---------------------|-----------|---------|---------------|------------------|--------------|--------------------|
| ABUNDANCE LAKE      | 8800      | 3/29/96 | 77            | 27.0             | 23.4         | 20.8               |
| AMBROSE             | 6480      | 3/28/96 | 42            | 12.0             | 9.8          | 13.2               |
| ASHLEY LAKE         | 4000      | 3/26/96 | 22            | 6.5              | 3.5          | 5.8                |
| ARCH FALLS          | 7350      | 3/27/96 | 45            | 12.8             | 10.4         | 12.8               |
| ASHLEY DIVIDE       | 4820      | 3/26/96 | 24            | 8.5              | 1.8          | 6.6                |
| BADGER PASS PILLOW  | 6900      | 4/01/96 | ---           | 39.2             | 31.5         | 36.5               |
| BADGER PASS         | 6900      | 4/04/96 | 102           | 39.7             | 32.4         | 38.4               |
| BALD RIDGE          | 7500      | 3/31/96 | 52            | 13.8             | 14.0         | 13.4               |
| BANFIELD MTN PILLOW | 5600      | 4/01/96 | ---           | 21.1             | 17.5         | 20.2               |
| BANFIELD MOUNTAIN   | 5600      | 3/30/96 | 57            | 20.5             | 17.6         | 22.9               |
| BAREE CREEK         | 5500      | 3/28/96 | 89            | 36.0             | 39.8         | 45.3               |
| BAREE MIDWAY        | 4600      | 3/28/96 | 67            | 23.5             | 24.4         | 35.1               |
| BAREE TRAIL         | 3800      | 3/28/96 | 18            | 6.1              | 2.3          | 8.4                |
| BARKER LAKES PILLOW | 8250      | 4/01/96 | ---           | 15.3             | 15.2         | 15.4               |
| BARKER LAKES        | 8250      | 3/27/96 | 51            | 14.8             | 14.2         | 15.6               |
| BASIN CREEK PILLOW  | 7180      | 4/01/96 | ---           | 9.0              | 12.0         | 8.7                |
| BASIN CREEK         | 7180      | 3/27/96 | 35            | 8.8              | 12.2         | 8.7                |
| BASSOO PEAK         | 5150      | 3/29/96 | 31            | 8.6              | 5.1          | 11.3               |
| BEAGLE SPGS PILLOW  | 8850      | 4/01/96 | ---           | 10.9             | 9.3          | 8.4                |
| BEAGLE SPRINGS      | 8850      | 3/30/96 | 40            | 11.0             | 11.0         | 9.7                |
| BEAR BASIN          | 8150      | 3/28/96 | 70            | 24.0             | 20.6         | 21.4               |
| BEAVER CREEK PILLOW | 7850      | 4/01/96 | ---           | 20.4             | 22.4         | 18.3               |
| BERRY MEADOW        | 7000      | 3/29/96 | 35            | 8.4              | 6.4          | 8.0                |
| BIG CREEK           | 6750      | 4/04/96 | 114           | 45.8             | 43.1         | 45.7               |
| BIG SNOWY           | 7150      | 3/27/96 | 69            | 17.3             | 20.9         | 22.4               |
| BISSON CREEK PILLOW | 4920      | 4/01/96 | ---           | 9.1              | 6.2          | 10.2               |
| BISSON CREEK        | 4920      | 3/27/96 | 29            | 9.4              | 7.6          | 9.7                |
| BLACK BEAR PILLOW   | 7950      | 4/01/96 | ---           | 49.0             | 58.0         | 38.5               |
| BLACK MOUNTAIN      | 7750      | 3/26/96 | 49            | 14.4             | 14.2         | 16.3               |
| BLACK PINE PILLOW   | 7100      | 4/01/96 | ---           | 16.1             | 9.3          | 12.7               |
| BLACK PINE          | 7100      | 3/31/96 | 50            | 16.0             | 10.1         | 13.5               |
| BLACKTAIL           | 5650      | 4/02/96 | 44            | 13.5             | 10.4         | 14.2               |
| BLOODY DICK PILLOW  | 7550      | 4/01/96 | ---           | 16.6             | 13.5         | 12.6               |
| BLOODY DICK         | 7600      | 3/30/96 | 56            | 19.7             | 12.2         | 13.7               |
| BLUE LAKE           | 5900      | 4/04/96 | 60            | 19.1             | 19.3         | 25.3               |
| BOTS SOTS           | 7750      | 3/28/96 | 47            | 12.0             | 7.1          | 8.2                |
| BOULDER MTN PILLOW  | 7950      | 4/01/96 | ---           | 22.6             | 21.7         | 20.6               |
| BOULDER MOUNTAIN    | 7950      | 3/27/96 | 67            | 20.5             | 17.8         | 19.5               |
| BOX CANYON PILLOW   | 6700      | 4/01/96 | ---           | 15.2             | 7.9          | 10.3               |
| BOX CANYON          | 6670      | 3/28/96 | 51            | 13.9             | 7.9          | 12.2               |
| BOXELDER CREEK      | 5100      | 3/28/96 | 29            | 7.7              | 3.0          | 8.3                |
| BRANHAM LAKES       | 8850      | 3/27/96 | 98            | 36.9             | 34.5         | 30.2               |
| BRIDGER BOWL PILLOW | 7250      | 3/28/96 | ---           | 24.6             | 26.3         | 26.2               |
| BRIDGER BOWL        | 7250      | 3/28/96 | 78            | 26.8             | 26.3         | 26.9               |
| BRISTOW CREEK       | 3900      | 3/30/96 | 26            | 7.8              | 4.7          | 9.4                |
| BRUSH CREEK TIMBER  | 5000      | 3/28/96 | 23            | 6.0              | 5.0          | 9.5                |
| BULL MOUNTAIN       | 6600      | 3/29/96 | 23            | 6.7              | 3.6          | 6.4                |
| CABIN CREEK         | 5200      | 3/28/96 | 23            | 7.1              | .6           | 6.2                |
| CALL ROAD           | 8050      | 3/31/96 | 45            | 12.5             | 13.6         | 12.4               |
| CAIVERT CR PILLOW   | 6430      | 4/01/96 | ---           | 12.3             | 7.7          | 8.9                |
| CAMP MISERY         | 6400      | 3/28/96 | 108           | 43.0             | 50.0         | 49.0               |
| CAMP SENIA          | 7890      | 3/28/96 | 40            | 9.2              | 6.7          | 6.6                |

| SNOW COURSE          | ELEVATION | DATE    | SNOW<br>DEPTH | WATER<br>CONTENT | LAST<br>YEAR | AVERAGE<br>1961-90 |
|----------------------|-----------|---------|---------------|------------------|--------------|--------------------|
| CARROT BASIN PILLOW  | 9000      | 4/01/96 | ---           | 33.5             | 35.1         | 28.3               |
| CARROT BASIN         | 9000      | 3/29/96 | 107           | 38.4             | 40.9         | 36.4               |
| CARTER CREEK         | 7400      | 3/28/96 | 21            | 4.7              | 12.2         | 5.9                |
| CEDAR GROVE          | 3760      | 3/27/96 | 35            | 7.2              | 6.4          | 12.2               |
| CHESSMAN RESERVOIR   | 6200      | 3/28/96 | 10            | 1.7              | 2.7          | 3.9                |
| CHICKEN CREEK        | 4060      | 3/29/96 | 46            | 16.8             | 11.7         | 14.0               |
| CLOVER MDW PILLOW    | 8800      | 4/01/96 | ---           | 18.5             | 21.1         | 18.6               |
| CLOVER MEADOW        | 8600      | 3/31/96 | 60            | 17.8             | 16.8         | 17.9               |
| COLE CREEK PILLOW    | 7850      | 4/01/96 | ---           | 20.8             | 17.1         | 17.3               |
| COLE CREEK           | 7850      | 3/26/96 | 71            | 22.3             | 18.0         | 18.0               |
| COLLEY CREEK         | 6300      | 3/29/96 | 37            | 9.5              | 5.4          | 8.9                |
| COMBINATION PILLOW   | 5600      | 4/01/96 | ---           | 5.4              | 1.2          | 5.8                |
| COMBINATION          | 5600      | 3/31/96 | 15            | 4.0              | 1.0          | 6.1                |
| COPPER BOTTOM PILLOW | 5200      | 4/01/96 | ---           | 12.0             | 6.7          | 11.7               |
| COPPER BOTTOM        | 5200      | 3/31/96 | 32            | 10.6             | 4.8          | 10.5               |
| COPPER CAMP PILLOW   | 6950      | 4/01/96 | ---           | 39.7             | 25.5         | 34.9               |
| COPPER CAMP          | 6950      | 3/31/96 | 100           | 39.8             | 23.7         | 29.9               |
| COPPER CREEK         | 5700      | 3/31/96 | 46            | 14.8             | 5.8          | 14.2               |
| COPPER MOUNTAIN      | 7700      | 3/28/96 | 48            | 13.2             | 14.1         | 11.4               |
| COTTONWOOD CREEK     | 6400      | 3/26/96 | 16            | 4.4              | 8.8          | 8.8                |
| COYOTE HILL          | 4200      | 3/27/96 | 29            | 8.0              | 3.3          | 9.5                |
| CREVICE MOUNTAIN     | 8400      | 3/28/96 | 54            | 14.1             | 11.1         | 10.9               |
| CRYSTAL LAKE PILLOW  | 6050      | 4/01/96 | ---           | 9.7              | 13.9         | 12.8               |
| CRYSTAL LAKE         | 6050      | 3/27/96 | 37            | 10.2             | 14.4         | 14.5               |
| DAD CREEK LAKE       | 8400      | 3/30/96 | 54            | 15.8             | 20.2         | 15.1               |
| DAISY PEAK           | 7600      | 3/25/96 | 42            | 10.4             | 9.6          | 10.6               |
| DALY CREEK PILLOW    | 5780      | 4/01/96 | ---           | 11.3             | 7.1          | 11.9               |
| DALY CREEK           | 5780      | 3/24/96 | 36            | 10.4             | 8.6          | 12.3               |
| DARKHORSE LK. PILLOW | 8700      | 4/01/96 | ---           | 37.0             | 33.2         | 33.7               |
| DARKHORSE LAKE       | 8600      | 3/30/96 | 87            | 31.9             | 29.3         | 27.0               |
| DAVIS CREEK          | 5400      | 3/29/96 | 64            | 22.7             | 20.8         | 24.3               |
| DEADMAN CR PILLOW    | 6450      | 4/01/96 | ---           | 10.4             | 7.7          | 10.2               |
| DEADMAN CREEK        | 6450      | 3/29/96 | 37            | 9.9              | 8.4          | 11.3               |
| DEVILS SLIDE         | 8100      | 3/27/96 | 72            | 24.4             | 18.6         | 22.1               |
| DISCOVERY BASIN      | 7050      | 3/28/96 | 44            | 12.2             | 9.3          | 11.3               |
| DIVIDE PILLOW        | 7800      | 4/01/96 | ---           | 10.7             | 16.1         | 11.3               |
| DIVIDE               | 7800      | 3/31/96 | 37            | 9.9              | 17.0         | 11.6               |
| DIX HILL             | 6400      | 3/31/96 | 34            | 11.5             | 5.8          | 11.3               |
| DUPUYER CREEK PILLOW | 5750      | 4/01/96 | ---           | 13.9             | 2.9          | 12.9               |
| EAGLE CREEK          | 7000      | 3/26/96 | 49            | 15.2             | 13.6         | 14.4               |
| EAST FORK R.S.       | 5400      | 3/27/96 | 14            | 4.4              | 1.7          | 5.6                |
| EL DORADO MINE       | 7800      | 3/30/96 | 72            | 23.3             | 20.5         | 21.6               |
| ELK HORN SPRINGS     | 7800      | 3/29/96 | 45            | 12.6             | 10.0         | 9.3                |
| ELK PEAK             | 8000      | 3/26/96 | 52            | 16.2             | 14.0         | 17.3               |
| EMERY CREEK PILLOW   | 4350      | 4/01/96 | ---           | 11.6             | 11.2         | 16.3               |
| FATTY CREEK          | 5500      | 4/04/96 | 64            | 22.3             | 22.2         | 24.3               |
| FISH CREEK           | 8000      | 3/27/96 | 39            | 9.5              | 14.5         | 9.9                |
| FISHER CREEK PILLOW  | 9100      | 4/01/96 | ---           | 46.9             | 34.6         | 36.1               |
| FIVE-BULL            | 5700      | 4/01/96 | 16            | 5.1              | .2           | 6.3                |
| FLATTOP MTN PILLOW   | 6300      | 4/01/96 | ---           | 52.7             | 45.7         | 47.1               |
| FLEEGER RIDGE        | 7500      | 3/29/96 | 50            | 12.5             | 13.3         | 11.3               |
| FOOLHEN              | 8280      | 3/29/96 | 63            | 20.9             | 16.8         | 17.1               |
| FOREST LAKE          | 6400      | 3/26/96 | 36            | 9.8              | 11.0         | 12.6               |
| FOUR MILE            | 6900      | 3/27/96 | 31            | 8.8              | 9.2          | 8.9                |
| FOURTH OF JULY       | 3450      | 3/30/96 | 19            | 5.5              | .0           | 7.4                |
| FRED BURR PASS       | 8000      | 3/28/96 | 85            | 32.2             | 22.2         | 25.4               |
| FREIGHT CREEK        | 6000      | 4/04/96 | 46            | 12.6             | 10.4         | 15.5               |

| SNOW COURSE          | ELEVATION | DATE    | SNOW<br>DEPTH | WATER<br>CONTENT | LAST<br>YEAR | AVERAGE<br>1961-90 |
|----------------------|-----------|---------|---------------|------------------|--------------|--------------------|
| FROHNER MDWS PILLOW  | 6480      | 4/01/96 | ---           | 8.8              | 5.6          | 8.7                |
| FROHNER MEADOWS      | 6480      | 3/28/96 | 27            | 7.0              | 3.7          | 8.4                |
| GARVER CREEK PILLOW  | 4250      | 3/31/96 | ---           | 11.3             | 7.6          | 10.1               |
| GARVER CREEK         | 4250      | 3/31/96 | 47            | 12.9             | 8.8          | 10.2               |
| GIBBONS PASS         | 7100      | 3/27/96 | 82            | 30.2             | 21.1         | 23.2               |
| GOAT MOUNTAIN        | 7000      | 3/29/96 | 38            | 10.6             | 4.5          | 10.5               |
| GOLD CREEK LAKE      | 7200      | 3/30/96 | 54            | 16.0             | 13.6         | 15.9               |
| GOLD STONE           | 8100      | 3/30/96 | 67            | 23.6             | 16.2         | 17.4               |
| GRASSHOPPER          | 7000      | 3/26/96 | 19            | 5.2              | 5.2          | 6.2                |
| GRAVE CRK PILLOW     | 4300      | 4/01/96 | ---           | 15.4             | 12.2         | 16.7               |
| GRAVE CREEK          | 4300      | 4/03/96 | 39            | 14.4             | 12.4         | 17.0               |
| GRIFFIN CR DIVIDE    | 5150      | 3/29/96 | 30            | 8.5              | 6.2          | 11.2               |
| GUNSIGHT LAKE        | 6300      | 4/04/96 | 114           | 47.8             | 31.8         | 40.0               |
| HAND CREEK PILLOW    | 5030      | 4/01/96 | ---           | 12.1             | 10.8         | 13.3               |
| HAND CREEK           | 5030      | 3/28/96 | 40            | 11.2             | 11.0         | 13.6               |
| HAWKINS LAKE PILLOW  | 6450      | 4/01/96 | ---           | 27.6             | 23.2         | 29.0               |
| HAWKINS LAKE         | 6450      | 3/29/96 | 84            | 31.4             | 27.6         | 31.0               |
| HAYMAKER             | 8050      | 3/25/96 | 47            | 12.6             | 13.2         | 12.7               |
| HEART LAKE TRAIL     | 4800      | 3/26/96 | 49            | 16.6             | 13.3         | 21.6               |
| HEBGEN DAM           | 6550      | 3/27/96 | 38            | 12.1             | 14.3         | 12.1               |
| HELL ROARING DIVIDE  | 5770      | 3/29/96 | 82            | 30.9             | 29.7         | 31.0               |
| HERRIG JUNCTION      | 4850      | 3/28/96 | 74            | 28.9             | 26.2         | 26.0               |
| HOLBROOK             | 4530      | 3/31/96 | 29            | 9.0              | 2.0          | 9.0                |
| HOODOO BASIN PILLOW  | 6050      | 4/01/96 | ---           | 52.0             | 38.6         | 47.0               |
| HOODOO BASIN         | 6050      | 3/26/96 | 133           | 50.7             | 39.9         | 51.0               |
| HOODOO CREEK         | 5900      | 3/26/96 | 114           | 44.0             | 32.2         | 46.3               |
| INDEPENDENCE         | 7850      | 3/28/96 | 69            | 22.2             | 13.8         | 18.3               |
| INTERGAARD           | 6450      | 3/29/96 | 24            | 6.7              | 7.0          | 8.6                |
| JAHNKE LAKE TRAIL    | 7200      | 3/29/96 | 50            | 13.8             | 10.8         | 10.0               |
| JOHNSON PARK         | 6450      | 3/25/96 | 22            | 5.6              | 2.4          | 6.9                |
| KEELER CREEK         | 3300      | 3/28/96 | 20            | 8.0              | 9.6          | 10.8               |
| KINGS HILL           | 7500      | 3/29/96 | 52            | 14.2             | 12.2         | 14.5               |
| KISHENEHN            | 3890      | 3/28/96 | 26            | 7.9              | 5.8          | 7.0                |
| KIWANIS CAMP         | 3720      | 3/28/96 | 5             | .8               | 2.0          | .8                 |
| KRAFT CREEK PILLOW   | 4750      | 4/01/96 | ---           | 14.1             | 7.1          | 15.3               |
| LAKE CREEK           | 6100      | 3/31/96 | 33            | 8.4              | 9.8          | 8.5                |
| LAKEVIEW CANYON      | 6930      | 3/29/96 | 42            | 9.7              | 14.0         | 12.3               |
| LAKEVIEW RDG. PILLOW | 7400      | 4/01/96 | ---           | 12.3             | 15.2         | 13.0               |
| LAKEVIEW RIDGE       | 7400      | 3/29/96 | 40            | 9.6              | 15.5         | 11.1               |
| LEMHI RIDGE PILLOW   | 8100      | 4/01/96 | ---           | 13.1             | 13.6         | 11.1               |
| LEMHI RIDGE          | 8100      | 3/30/96 | 43            | 12.5             | 14.2         | 10.7               |
| LICK CREEK PILLOW    | 6860      | 4/01/96 | ---           | 10.2             | 11.7         | 14.4               |
| LITTLE PARK          | 7400      | 3/28/96 | 60            | 18.0             | 14.8         | 16.3               |
| LOGAN CREEK          | 4300      | 3/28/96 | 27            | 8.2              | 5.1          | 7.1                |
| LONE MOUNTAIN        | 8880      | 3/29/96 | 88            | 31.7             | 30.4         | 23.8               |
| LOST HORSE           | 5940      | 3/26/96 | 73            | 28.8             | 22.6         | 32.3               |
| LOST SOUL            | 4800      | 3/30/96 | 46            | 15.2             | 12.4         | 15.3               |
| LOWER TWIN PILLOW    | 7900      | 4/01/96 | ---           | 21.3             | 22.0         | 18.6               |
| LOWER TWIN           | 7900      | 3/27/96 | 76            | 26.2             | 26.6         | 22.1               |
| LUBRECHT PILLOW      | 4680      | 4/01/96 | ---           | 4.3              | .0           | 5.1                |
| LUBRECHT FLUME       | 4680      | 3/30/96 | 9             | 3.0              | .0           | 4.4                |
| LUBRECHT FOREST NO 3 | 5450      | 3/29/96 | 20            | 5.6              | 2.3          | 6.8                |
| LUBRECHT FOREST NO 4 | 4650      | 3/29/96 | 4             | 1.2              | .0           | 2.1                |
| LUBRECHT FOREST NO 6 | 4040      | 3/29/96 | 5             | 1.7              | .0           | 2.3                |
| LUBRECHT HYDROPLT    | 4200      | 3/30/96 | 11            | 4.2              | .0           | 4.2                |
| MADISON PLT PILLOW   | 7750      | 4/01/96 | ---           | 29.0             | 33.4         | 24.8               |
| MADISON PLATEAU      | 7750      | 3/25/96 | 72            | 28.0             | 33.7         | 23.9               |

| SNOW COURSE          | ELEVATION | DATE    | SNOW<br>DEPTH | WATER<br>CONTENT | LAST<br>YEAR | AVERAGE<br>1961-90 |
|----------------------|-----------|---------|---------------|------------------|--------------|--------------------|
| MANY GLACIER PILLOW  | 4900      | 4/01/96 | ---           | 14.0             | 5.4          | 16.6               |
| MANY GLACIER         | 4900      | 3/30/96 | 49            | 16.4             | 10.8         | 18.8               |
| MARIAS PASS          | 5250      | 3/28/96 | 48            | 16.7             | 9.2          | 17.4               |
| MAYNARD CR PILLOW    | 6210      | 3/28/96 | ---           | 12.9             | 9.5          | 11.4               |
| MAYNARD CREEK        | 6210      | 3/28/96 | 43            | 10.8             | 10.5         | 15.1               |
| MIDDLE MILL CREEK    | 7850      | 3/27/96 | 53            | 18.9             | 16.4         | 16.6               |
| MILL CREEK           | 7500      | 3/29/96 | 55            | 14.9             | 11.9         | 13.7               |
| MINERAL CREEK        | 4000      | 3/29/96 | 46            | 17.6             | 12.6         | 17.5               |
| MONUMENT PK PILLOW   | 8850      | 4/01/96 | ---           | 26.4             | 20.9         | 21.4               |
| MONUMENT PEAK        | 8850      | 3/28/96 | 86            | 27.2             | 20.8         | 26.5               |
| MOSS PEAK PILLOW     | 6780      | 4/01/96 | ---           | 43.5             | 41.0         | 38.4               |
| MOULTON RESERVOIR    | 6850      | 3/27/96 | 35            | 9.2              | 9.6          | 6.8                |
| MT LOCKHART PILLOW   | 6400      | 4/01/96 | ---           | 26.0             | 16.1         | 21.5               |
| MOUNT LOCKHART       | 6400      | 3/31/96 | 83            | 26.6             | 18.6         | 23.1               |
| MUDD LAKE            | 7650      | 3/29/96 | 75            | 28.1             | 17.8         | 20.0               |
| MULE CREEK PILLOW    | 8300      | 4/01/96 | ---           | 22.0             | 17.0         | 16.2               |
| MULE CREEK           | 8300      | 3/29/96 | 68            | 20.8             | 18.0         | 15.9               |
| NEVADA CREEK PILLOW  | 6480      | 4/01/96 | ---           | 17.0             | 10.9         | 13.4               |
| NEVADA CREEK         | 6480      | 3/29/96 | 57            | 16.5             | 10.2         | 14.4               |
| NEW WORLD            | 6900      | 3/27/96 | 43            | 13.2             | 16.8         | 15.7               |
| NEWTON MOUNTAIN      | 5600      | 3/30/96 | 83            | 32.9             | 30.8         | 35.6               |
| NEZ PERCE CMP PILLOW | 5650      | 4/01/96 | ---           | 17.1             | 11.0         | 15.1               |
| NEZ PERCE CAMP       | 5650      | 3/27/96 | 45            | 14.6             | 11.0         | 15.2               |
| NEZ PERCE CREEK      | 6600      | 3/28/96 | 26            | 7.1              | 6.3          | 7.1                |
| NEZ PERCE PASS       | 6570      | 3/27/96 | 46            | 15.6             | 10.0         | 17.1               |
| NOISY BASIN PILLOW   | 6040      | 4/01/96 | ---           | 41.1             | 39.1         | 40.7               |
| NOISY BASIN          | 6040      | 3/28/96 | 108           | 41.8             | 39.0         | 45.4               |
| N.F. ELK CR PILLOW   | 6250      | 4/01/96 | ---           | 14.0             | 8.9          | 13.2               |
| N.F. ELK CREEK       | 6250      | 3/30/96 | 44            | 12.5             | 9.1          | 13.0               |
| NF JOCKO PILLOW      | 6330      | 4/01/96 | ---           | 49.4             | 29.4         | 47.7               |
| NORTH FORK JOCKO     | 6330      | 4/04/96 | 120           | 47.4             | 32.5         | 44.9               |
| N.E. ENTRANCE PILLOW | 7350      | 4/01/96 | ---           | 12.8             | 7.5          | 9.2                |
| NORTHEAST ENTRANCE   | 7350      | 3/26/96 | 41            | 13.8             | 8.4          | 9.1                |
| NOTCH                | 8500      | 3/31/96 | 57            | 16.2             | 26.8         | 16.4               |
| OPHIR PARK           | 7150      | 3/31/96 | 53            | 17.8             | 11.7         | 18.0               |
| PALISADE CREEK       | 8250      | 3/29/96 | 98            | 41.1             | 30.0         | 29.9               |
| PETERSON MDW PILLOW  | 7200      | 3/27/96 | ---           | 9.8              | 9.9          | 11.0               |
| PETERSON MEADOWS     | 7200      | 3/27/96 | 35            | 9.0              | 10.1         | 10.8               |
| PICKET PIN LOWER     | 6200      | 3/25/96 | 12            | 3.0              | .3           | 3.0                |
| PICKET PIN MIDDLE    | 7250      | 3/25/96 | 40            | 13.1             | 1.6          | 13.4               |
| PICKET PIN UPPER     | 8100      | 3/25/96 | 71            | 23.6             | 16.4         | 20.9               |
| PICKFOOT CRK PILLOW  | 6650      | 4/01/96 | ---           | 12.3             | 6.8          | 11.0               |
| PICKFOOT CREEK       | 6650      | 3/27/96 | 46            | 11.5             | 5.2          | 10.5               |
| PIKE CREEK PILLOW    | 5930      | 4/01/96 | ---           | 30.7             | 20.5         | 27.9               |
| PIKE CREEK           | 5930      | 3/26/96 | 72            | 25.0             | 17.9         | 26.7               |
| PIPESTONE PASS       | 7200      | 3/29/96 | 22            | 5.4              | 7.6          | 5.9                |
| PLACER BASIN PILLOW  | 8830      | 4/01/96 | ---           | 22.1             | 15.3         | 19.1               |
| POORMAN CREEK        | 5100      | 3/27/96 | 71            | 23.2             | 26.8         | 34.4               |
| PORCUPINE PILLOW     | 6500      | 4/01/96 | ---           | 8.0              | 7.5          | 7.4                |
| PORCUPINE            | 6500      | 3/31/96 | 29            | 7.2              | 7.6          | 8.0                |
| POTOMACETON PARK     | 7150      | 3/26/96 | 43            | 14.4             | 17.1         | 14.6               |
| RED MOUNTAIN         | 6000      | 3/28/96 | 60            | 22.1             | 17.2         | 18.9               |
| RED TOP              | 5260      | 3/30/96 | 75            | 29.9             | 24.3         | 29.0               |
| REVAIS CREEK         | 4800      | 3/28/96 | 8             | .6               | .0           | 2.1                |
| ROCK CREEK           | 5600      | 3/27/96 | 28            | 6.6              | 10.3         | 10.6               |
| ROCK CREEK MEADOW    | 8160      | 3/29/96 | 79            | 26.0             | 22.0         | 22.0               |
| ROCKER PEAK PILLOW   | 8000      | 4/01/96 | ---           | 16.2             | 14.1         | 15.3               |

| SNOW COURSE          | ELEVATION | DATE    | SNOW<br>DEPTH | WATER<br>CONTENT | LAST<br>YEAR | AVERAGE<br>1961-90 |
|----------------------|-----------|---------|---------------|------------------|--------------|--------------------|
| ROCKER PEAK          | 8000      | 3/29/96 | 54            | 16.5             | 14.6         | 15.5               |
| ROCKY BOY PILLOW     | 4700      | 3/28/96 | ---           | 1.5E             | 2.7          | 4.9                |
| ROCKY BOY            | 4700      | 3/28/96 | 9             | 1.3              | 2.2          | 4.4                |
| SACAJAWEA            | 6550      | 3/28/96 | 49            | 14.3             | 13.2         | 14.6               |
| SADDLE MTN PILLOW    | 7900      | 4/01/96 | ---           | 35.5             | 25.2         | 26.1               |
| SADDLE MOUNTAIN      | 7940      | 3/27/96 | 92            | 34.4             | 24.3         | 25.6               |
| SHORT CREEK PILLOW   | 7000      | 4/01/96 | ---           | 5.9              | 6.7          | 6.3                |
| SHOWER FALLS PILLOW  | 8100      | 4/01/96 | ---           | 25.3             | 20.5         | 23.8               |
| SHOWER FALLS         | 8100      | 3/27/96 | 73            | 25.0             | 19.8         | 23.6               |
| SILVER RUN PILLOW    | 6630      | 4/01/96 | ---           | 6.9              | 2.5          | 6.8                |
| SILVER RUN           | 6630      | 3/26/96 | 12            | 3.2              | .3           | 5.2                |
| SKALKAHO PILLOW      | 7260      | 4/01/96 | ---           | 32.1             | 21.4         | 24.9               |
| SKALKAHO SUMMIT      | 7250      | 3/24/96 | 86            | 30.6             | 21.0         | 25.9               |
| SLAG-A-MELT LAKE     | 8750      | 3/29/96 | 79            | 25.8             | 20.8         | 25.8               |
| SLIDE ROCK MOUNTAIN  | 7100      | 3/30/96 | 50            | 15.0             | 11.6         | 16.7               |
| SMUGGLER MINE        | 6960      | 3/27/96 | 32            | 9.3              | 12.8         | 10.5               |
| S.F. SHIELDS PILLOW  | 8100      | 4/01/96 | ---           | 20.1             | 18.5         | 17.9               |
| S.F. SHIELDS         | 8100      | 3/31/96 | 78            | 25.5             | --           | 25.0               |
| SPOTTED BEAR MTN.    | 7000      | 4/04/96 | 45            | 14.9             | 8.0          | 14.9               |
| SPUR PARK PILLOW     | 8100      | 4/01/96 | ---           | 24.1             | 18.2         | 22.2               |
| SPUR PARK            | 8100      | 3/29/96 | 65            | 21.4             | 15.2         | 21.4               |
| SQUAW PEAK           | 6150      | 3/28/96 | 51            | 15.7             | 10.3         | 16.0               |
| STAHL PEAK PILLOW    | 6030      | 4/01/96 | ---           | 47.3             | 38.6         | 35.1               |
| STAHL PEAK           | 6030      | 4/03/96 | 121           | 51.2             | 40.6         | 39.7               |
| STEMPLE PASS         | 6600      | 3/27/96 | 34            | 8.2              | 6.6          | 10.6               |
| STORM LAKE           | 7780      | 3/27/96 | 50            | 12.8             | 13.7         | 14.0               |
| STRYKER BASIN        | 6180      | 3/28/96 | 96            | 38.1             | 35.0         | 34.6               |
| STUART MOUNTAIN      | 7400      | 4/04/96 | 102           | 43.1             | 25.0         | 32.9               |
| SUCKER CREEK         | 3960      | 3/28/96 | 6             | .7               | 3.1          | .4                 |
| TAYLOR ROAD          | 4080      | 3/28/96 | 7             | .9               | 3.2          | 2.2                |
| TEN MILE LOWER       | 6600      | 3/25/96 | 22            | 5.7              | 5.2          | 7.8                |
| TEN MILE MIDDLE      | 6800      | 3/25/96 | 46            | 11.5             | 11.8         | 12.2               |
| TEPEE CREEK PILLOW   | 8000      | 4/01/96 | ---           | 13.9             | 19.4         | 13.4               |
| TEPEE CREEK          | 8000      | 3/31/96 | 58            | 15.2             | 22.4         | 15.8               |
| TIMBERLINE CREEK     | 8850      | 3/25/96 | 68            | 19.7             | 16.6         | 14.8               |
| TIZER BASIN PILLOW   | 6840      | 4/01/96 | ---           | 10.7             | 10.3         | 12.0               |
| TRAIL CREEK          | 7090      | 3/30/96 | 32            | 8.7              | 10.2         | 8.7                |
| TRINKUS LAKE         | 6100      | 3/28/96 | 104           | 40.8             | 35.6         | 43.4               |
| TRUMAN CREEK         | 4060      | 3/26/96 | 13            | 4.8              | .1           | 3.5                |
| TV MOUNTAIN          | 6800      | 4/04/96 | 60            | 20.4             | 14.3         | 19.2               |
| TWELVEMILE PILLOW    | 5600      | 4/01/96 | ---           | 14.6             | 11.2         | 18.6               |
| TWELVEMILE CREEK     | 5600      | 3/26/96 | 36            | 13.0             | 11.8         | 21.6               |
| TWENTY-ONE MILE      | 7150      | 3/27/96 | 53            | 18.6             | 23.3         | 17.4               |
| TWIN CREEKS          | 3580      | 4/04/96 | 27            | 9.4              | 3.7          | 10.3               |
| TWIN LAKES           | 6510      | 3/26/96 | 118           | 44.8             | 35.2         | 41.7               |
| UPPER HOLLAND LAKE   | 6200      | 4/04/96 | 93            | 31.4             | 25.1         | 35.4               |
| WALDRON PILLOW       | 5600      | 4/01/96 | ---           | 14.4             | 6.0          | 11.3               |
| WALDRON              | 5600      | 3/31/96 | 35            | 9.8              | 2.6          | 10.0               |
| WARM SPRINGS PILLOW  | 7800      | 4/01/96 | ---           | 29.9             | 18.8         | 22.3               |
| WARM SPRINGS         | 7800      | 3/28/96 | 74            | 26.0             | 16.8         | 19.8               |
| WEASEL DIVIDE        | 5450      | 4/03/96 | 96            | 35.4             | 33.4         | 33.8               |
| WEST YELL'ST PILLOW  | 6700      | 3/27/96 | ---           | 6.9              | 11.2         | 9.1                |
| WEST YELLOWSTONE     | 6700      | 3/27/96 | 31            | 10.5             | 16.0         | 11.6               |
| WHISKEY CREEK PILLOW | 6800      | 4/01/96 | ---           | 19.0             | 22.0         | 17.5               |
| WHISKEY CREEK        | 6800      | 3/25/96 | 56            | 21.0             | 29.3         | 21.5               |
| WHITE MILL PILLOW    | 8700      | 4/01/96 | ---           | 36.1             | 24.9         | 25.1               |
| WHITE PINE RIDGE     | 8850      | 3/30/96 | 20            | 4.4              | 9.0          | 5.8                |

| SNOW COURSE       | ELEVATION | DATE    | SNOW<br>DEPTH | WATER<br>CONTENT | LAST<br>YEAR | AVERAGE<br>1961-90 |
|-------------------|-----------|---------|---------------|------------------|--------------|--------------------|
| WILLOW CREEK      | 6500      | 3/26/96 | 32            | 9.4              | 4.9          | 9.5                |
| WOOD CREEK PILLOW | 5960      | 4/01/96 | ---           | 10.6             | 5.9          | 12.2               |
| WOOD CREEK        | 5960      | 4/01/96 | 36            | 11.5             | 4.9          | 11.3               |
| WRONG CREEK       | 5700      | 3/27/96 | 48            | 13.7             | 5.3          | 13.6               |
| WRONG RIDGE       | 6800      | 3/27/96 | 62            | 20.2             | 11.8         | 19.4               |

March has continued this winters on again/off again trend. Storms during the month varied between rain and snow and were hit and miss across the state. March was some what of a disappointing mountain snow producing month with most areas receiving below to well below average precipitation. The exception being in the central mountains where they received average to above average mountain snow. Temperatures were as varied as the moisture, with below zero wind chills bouncing back to daily highs in the upper forties and low fifties. Most streams have opened up and running free of ice. Streams in the northcentral and northeastern part of the state had some high water and flooding due to melting snow on frozen ground and ice jams.

## SNOWPACK

Storms that brought snow to the mountains and valleys across the state were highly variable. Some areas added several inches during storms while others a short distance away received very little. Overall, March was a disappointing month for snow accumulation, except in central Montana where March was above average. Even though March did not produce average snow water increases, most areas had a high enough snowpack earlier in the winter to where there should not be widespread water shortages.

As of April 1, mountain snow water conditions were 5 percent above average; 20 percent above last year; and decreased 6 percent during March.

Continuing the season trend, the Upper Yellowstone has continued to set new snowpack records. Snow water equivalents in the Clark's Fork/Rock Creek watersheds were 36 percent above average but ranged as high as 56 percent above average. West of the Continental Divide, snow water content was at average; 27 percent above last year; and decreased 7 percent during March. East of the Continental Divide, snow water content was 13 percent above average; 16 percent above last year; and dropped 1 percent during March.

With about 95 percent of the winter snowpack in place, most areas should have average to above average spring and summer water supply. The Upper Yellowstone should have above to well above spring and summer water supply.

| RIVER BASIN                 | % OF AVERAGE | % OF LAST YEAR |
|-----------------------------|--------------|----------------|
| COLUMBIA .....              | 100          | 127            |
| KOOTENAI .....              | 92           | 109            |
| FLATHEAD .....              | 103          | 128            |
| UPPER CLARK FORK .....      | 106          | 139            |
| BITTERROOT .....            | 107          | 142            |
| LOWER CLARK FORK .....      | 90           | 123            |
| MISSOURI .....              | 107          | 108            |
| MISSOURI HEADWATERS .....   | 111          | 101            |
| JEFFERSON .....             | 115          | 105            |
| MADISON .....               | 113          | 92             |
| GALLATIN .....              | 105          | 106            |
| MISSOURI MAINSTEM .....     | 97           | 129            |
| HEADWATERS MAINSTEM .....   | 98           | 115            |
| SMITH-JUDITH-MUSSELSHELL .. | 94           | 106            |
| SUN-TETON-MARIAS .....      | 101          | 166            |
| MILK (BEARPAW MTNS.) .....  | 71           | 84             |
| ST. MARY .....              | 104          | 132            |
| ST. MARY and MILK .....     | 98           | 124            |

SNOWPACK (continued)

| RIVER BASIN                   | % OF AVERAGE | % OF LAST YEAR |
|-------------------------------|--------------|----------------|
| YELLOWSTONE .....             | 121          | 127            |
| UPPER YELLOWSTONE .....       | 125          | 132            |
| LOWER YELLOWSTONE (WYOMING) . | 120          | 123            |
| WIND .....                    | 120          | 124            |
| SHOSHONE .....                | 153          | 139            |
| BIGHORN .....                 | 126          | 124            |
| TONGUE .....                  | 112          | 125            |
| POWDER .....                  | 107          | 106            |

PRECIPITATION

March mountain and valley precipitation, across the state, was 8 percent below average and 14 percent below last year, while water year precipitation was 34 percent above average and 28 percent above last year.

West of the Continental Divide, March mountain and valley precipitation was 31 percent below average and 23 percent below last year and water year precipitation was 37 percent above average and 35 percent above last year. East of the Continental Divide, March mountain and valley precipitation was 1 percent below average and 4 percent below last year and water year precipitation was 30 percent above average and 21 percent above last year.

Combined mountain and valley precipitation are as follows:

| RIVER BASIN                   | MARCH<br>% OF AVERAGE | WATER YEAR<br>% OF AVERAGE |
|-------------------------------|-----------------------|----------------------------|
| COLUMBIA .....                | 69                    | 137                        |
| KOOTENAI .....                | 49                    | 137                        |
| FLATHEAD .....                | 70                    | 136                        |
| UPPER CLARK FORK .....        | 80                    | 126                        |
| BITTERROOT .....              | 68                    | 145                        |
| LOWER CLARK FORK .....        | 65                    | 144                        |
| MISSOURI .....                | 96                    | 120                        |
| JEFFERSON .....               | 87                    | 118                        |
| MADISON .....                 | 92                    | 116                        |
| GALLATIN .....                | 85                    | 115                        |
| MISSOURI MAINSTEM .....       | 89                    | 106                        |
| SMITH-JUDITH-MUSSELSHELL .... | 110                   | 114                        |
| SUN-TETON-MARIAS .....        | 107                   | 131                        |
| MILK .....                    | 150                   | 141                        |
| ST. MARY .....                | 76                    | 144                        |
| YELLOWSTONE .....             | 126                   | 126                        |
| UPPER YELLOWSTONE .....       | 121                   | 132                        |
| LOWER YELLOWSTONE .....       | 131                   | 124                        |
| WIND .....                    | 111                   | 119                        |
| SHOSHONE .....                | 103                   | 148                        |
| BIGHORN .....                 | 146                   | 109                        |
| TONGUE .....                  | 163                   | 125                        |
| POWDER .....                  | 169                   | 118                        |



## RESERVOIRS

Major reservoir storage across the state was 23 percent above average and 40 percent above last year.

West of the Continental Divide, reservoirs were 19 percent above average and 11 percent above last year. East of the Continental Divide, reservoirs were 24 percent above average and 24 percent above last year.

| RIVER BASIN                    | % OF AVERAGE | % OF LAST YEAR |
|--------------------------------|--------------|----------------|
| COLUMBIA .....                 | 119          | 111            |
| KOOTENAI .....                 | 111          | 84             |
| FLATHEAD .....                 | 107          | 120            |
| UPPER CLARK FORK .....         | 124          | 111            |
| BITTERROOT .....               | 159          | 167            |
| LOWER CLARK FORK .....         | 96           | 74             |
| MISSOURI .....                 | 123          | 114            |
| JEFFERSON .....                | 111          | 121            |
| MADISON .....                  | 102          | 103            |
| GALLATIN .....                 | 146          | 107            |
| MISSOURI MAINSTEM .....        | 96           | 95             |
| SMITH-JUDITH-MUSSELSHELL ..... | 139          | 131            |
| SUN-TETON-MARIAS .....         | 142          | 128            |
| MILK .....                     | 116          | 141            |
| ST. MARY .....                 | 158          | 154            |
| YELLOWSTONE .....              | 98           | 88             |
| UPPER YELLOWSTONE .....        | 98           | 77             |
| LOWER YELLOWSTONE .....        | 99           | 99             |

## STREAMFLOW

Streamflow forecasts across Montana were 12 percent above average and 44 percent above last years forecasts.

West of the Continental Divide, streamflows are forecast to be 9 percent above average and 49 percent above last years forecasts. East of the Continental Divide, streamflows are forecast to be 14 percent above average and 38 percent above last years forecasts.

| RIVER BASIN                    | FORECASTS<br>% OF AVERAGE | FORECASTS<br>% OF LAST YEAR |
|--------------------------------|---------------------------|-----------------------------|
| COLUMBIA .....                 | 109                       | 149                         |
| KOOTENAI .....                 | 116                       | 132                         |
| FLATHEAD .....                 | 113                       | 150                         |
| UPPER CLARK FORK .....         | 92                        | 145                         |
| BITTERROOT .....               | 116                       | 162                         |
| LOWER CLARK FORK .....         | 109                       | 158                         |
| MISSOURI .....                 | 112                       | 119                         |
| JEFFERSON .....                | 118                       | 112                         |
| MADISON .....                  | 113                       | 95                          |
| GALLATIN .....                 | 108                       | 104                         |
| MISSOURI MAINSTEM .....        | 117                       | 115                         |
| SMITH-JUDITH-MUSSELSHELL ..... | 106                       | 129                         |
| SUN-TETON-MARIAS .....         | 112                       | 161                         |
| MILK .....                     | 103                       | 171                         |
| ST. MARY .....                 | 107                       | 128                         |
| YELLOWSTONE .....              | 132                       | 132                         |

STREAMFLOW (continued)

| RIVER BASIN             | FORECASTS<br>% OF AVERAGE | FORECASTS<br>% OF LAST YEAR |
|-------------------------|---------------------------|-----------------------------|
| UPPER YELLOWSTONE ..... | 131 .....                 | 132                         |
| LOWER YELLOWSTONE ..... | 132 .....                 | 131                         |

NOTE: The FORECAST AS % OF LAST YEAR column above, is this years forecast as a percent of last years forecast, not of what actually occurred.

SURFACE WATER SUPPLY INDEX

The Surface Water Supply Index (SWSI) is an indicator of surface water supply conditions for the spring and summer months. Water users that rely on mountain precipitation can use the index to evaluate seasonal surface water supplies. The SWSI accounts for mountain snowpack, mountain precipitation, streamflow, reservoir storage, and soil moisture.

| SWSI RATING  | SURFACE WATER CONDITION |
|--------------|-------------------------|
| +3.0 to +4.0 | Extremely Wet           |
| +2.0 to +3.0 | Moderately Wet          |
| +1.0 to +2.0 | Slightly Wet            |
| -1.0 to +1.0 | Near Average            |
| -1.0 to -2.0 | Slightly Dry            |
| -2.0 to -3.0 | Moderately Dry          |
| -3.0 to -4.0 | Extremely Dry           |

SWSI's on April 1, were ranging from -0.5 to +3.4 statewide. West of the Continental Divide, SWSI's were ranging from -0.5 to +2.0 and east of the Continental Divide from 0.0 to 3.4.

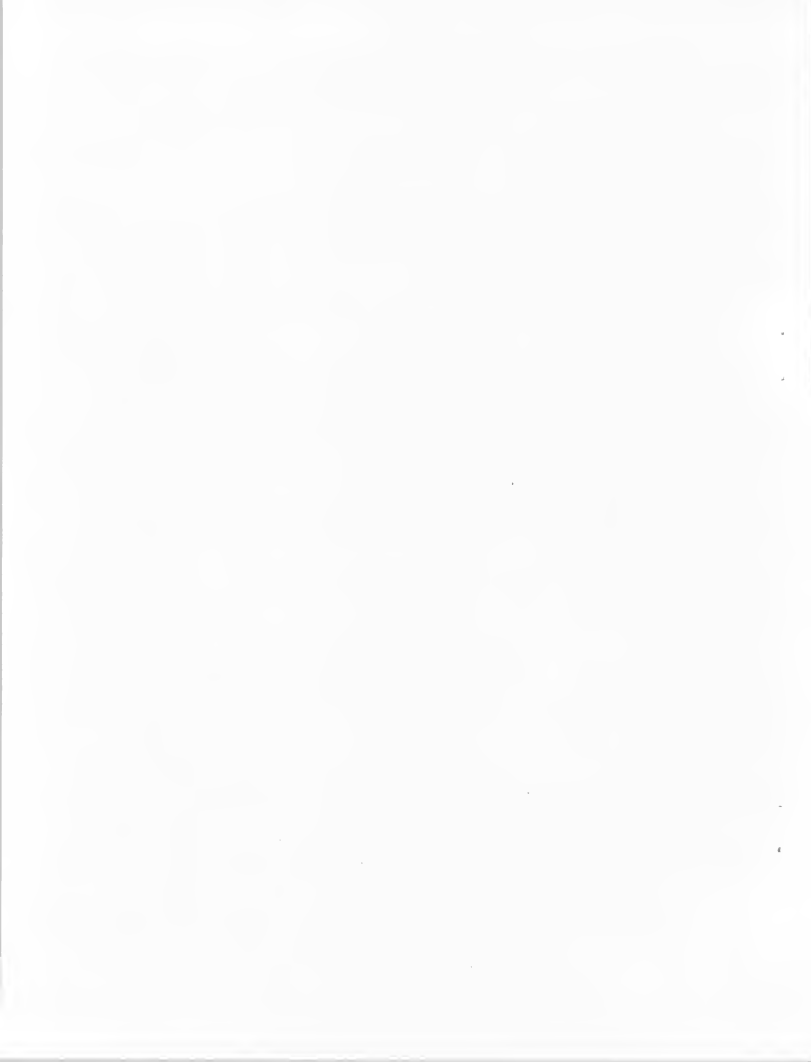
SWSI

Basin

|      |   |
|------|---|
| +1.1 | Kootenai River at Ft. Steele (Kootenai in Canada) |
| +1.8 | Tobacco River                                     |
| +1.8 | Kootenai Ft. Steele to Libby Dam                  |
| +2.0 | Kootenai River below Libby Dam                    |
| -0.5 | Fisher River                                      |
| +1.0 | Yaak River  |
| +1.4 | North Fork Flathead River                         |
| +1.5 | Middle FORK Flathead River                        |
| +1.1 | South Fork Flathead River                         |
| +1.3 | Flathead River at Columbia Falls                  |
| +1.4 | Stillwater/Whitefish Rivers                       |
| +0.7 | Swan River  |
| +1.6 | Flathead River at Polson                          |
| +1.1 | Mission Valley                                    |
| +0.9 | Little Bitterroot River                           |
| +0.7 | Clark Fork River above Rock Creek                 |
| +0.8 | Blackfoot River                                   |
| +0.8 | Clark Fork River above Missoula                   |
| +1.7 | Bitterroot River                                  |
| +1.0 | Clark Fork River below Bitterroot River           |
| +1.4 | Clark Fork River below Flathead River             |
| +1.8 | Beaverhead River                                  |
| 0.0  | Ruby River  |
| +2.1 | Big Hole River                                    |

## SURFACE WATER SUPPLY INDEX (continued)

| SWSI | Basin                                 |
|------|---------------------------------------|
| +0.7 | Boulder River (Jefferson)             |
| +1.7 | Jefferson River                       |
| +1.7 | Madison River                         |
| +1.1 | Gallatin River                        |
| +1.6 | Missouri River above Canyon Ferry     |
| +1.0 | Missouri River below Canyon Ferry     |
| +0.9 | Smith River                           |
| +1.4 | Sun River                             |
| +1.8 | Teton River                           |
| +2.2 | Birch/Dupuyer Creeks                  |
| +1.4 | Marias River                          |
| +1.0 | Musselshell River                     |
| +1.8 | Missouri River above Ft. Peck         |
| +1.6 | Missouri River below Ft. Peck         |
| +1.6 | Milk River                            |
| +3.4 | Yellowstone River above Livingston    |
| +0.9 | Shields River                         |
| +1.5 | Boulder River (Yellowstone)           |
| +1.8 | Stillwater River                      |
| +3.0 | Rock/Red Lodge Creeks                 |
| +3.3 | Clarks Fork River                     |
| +3.0 | Yellowstone River above Bighorn River |
| +2.1 | Bighorn River below Bighorn Lake      |
| +0.9 | Little Bighorn River                  |
| +2.8 | Yellowstone River below Bighorn River |
| +0.9 | Tongue River                          |
| +0.3 | Powder River                          |



# KOOTENAI RIVER BASIN in Montana as of April 1, 1996

Snowpack conditions in the Kootenai River Basin of Montana and Canada were near average. Snow water content for the Kootenai in Montana was 8 percent below average; 9 percent above last year; and decreased 7 percent during March. Snow water content for the East Kootenai in Canada was 20 percent above average; 33 percent above last year; and decreased 3 percent during March.

Mountain precipitation during March was 51 percent below average and 51 percent below last year. Valley precipitation during March was 21 percent below average and 26 percent below last year. Mountain and valley water year precipitation, beginning October 1, 1995, was 37 percent above average and 29 percent above last year.

Lake Koocanusa storage, on the last day of March, was 11 percent above average and 16 percent below last year.

Streamflows, for the period April through July, are forecast to be 16 percent above average and 32 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +1.1 in the Kootenai River at Ft. Steele (Kootenai in Canada); +1.8 in the Tobacco River; +1.8 in the Kootenai Ft. Steele to Libby Dam; +2.0 in the Kootenai River below Libby Dam; -0.5 in the Fisher River; and +1.0 in the Yaak River.

## Streamflow Forecasts

| Forecast Pt<br>Forecast<br>Period | <--- Drier --- Future Conditions --- Wetter ---> |                 |                                      |                 |                 |                       |
|-----------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|
|                                   | Chance of Exceeding *                            |                 |                                      |                 |                 |                       |
|                                   | 90%<br>(1000AF)                                  | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) | 30 Yr Avg<br>(1000AF) |
| TOBACCO RIVER nr Eureka           |  |                 |                                      |                 |                 |                       |
| APR-JUL                           | 133  | 149             | 160                                  | 120             | 171             | 187                   |
| APR-SEP                           | 144  | 162             | 175                                  | 119             | 188             | 206                   |
| LIBBY RES Inflow (1,2)            |  |                 |                                      |                 |                 |                       |
| APR-JUL                           | 5852   | 6614            | 6960                                 | 120             | 7306            | 8068                  |
| APR-SEP                           | 6860   | 7754            | 8160                                 | 121             | 8566            | 9460                  |
| FISHER RIVER near Libby           |  |                 |                                      |                 |                 |                       |
| APR-JUL                           | 178  | 194             | 205                                  | 88              | 216             | 232                   |
| APR-SEP                           | 192  | 209             | 220                                  | 88              | 231             | 248                   |
| YAAK RIVER near Troy              |  |                 |                                      |                 |                 |                       |
| APR-JUL                           | 452  | 481             | 500                                  | 104             | 519             | 548                   |
| APR-SEP                           | 476  | 505             | 525                                  | 104             | 545             | 574                   |

|             | <--- Drier --- Future Conditions --- Wetter ---> |          |                   |          |          |           |
|-------------|--|----------|-------------------|----------|----------|-----------|
| Forecast Pt | Chance of Exceeding *                            |          |                   |          |          |           |
| Forecast    | 90%  | 70%      | 50% (Most Prob)   | 30%      | 10%      | 30 Yr Avg |
| Period      | (1000AF)   | (1000AF) | (1000AF) (% AVG.) | (1000AF) | (1000AF) | (1000AF)  |

KOOTENAI at Leonia (1,2)

|         |      |      |      |     |      |       |      |
|---------|------|------|------|-----|------|-------|------|
| APR-JUL | 6865 | 7811 | 8240 | 115 | 8669 | 9615  | 7199 |
| APR-SEP | 7890 | 8977 | 9470 | 114 | 9963 | 11050 | 8275 |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

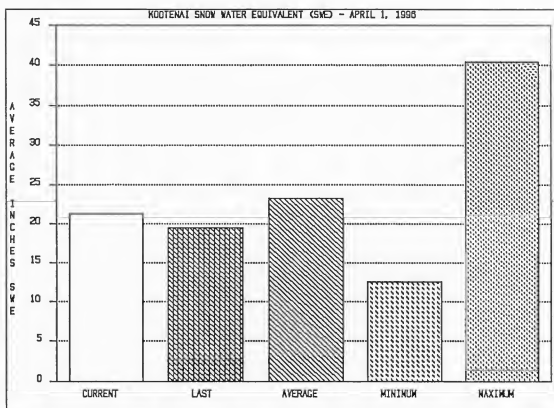
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

#### Reservoir Storage (1000AF) End of March

| Reservoir      | Usable<br>Capacity | ***** Usable Storage ***** |           |         |
|----------------|--------------------|----------------------------|-----------|---------|
|                |                    | This Year                  | Last Year | Average |
| LAKE KOOCANUSA | 5748.0             | 2386.0                     | 2835.0    | 2141.0  |

#### Watershed Snowpack Analysis

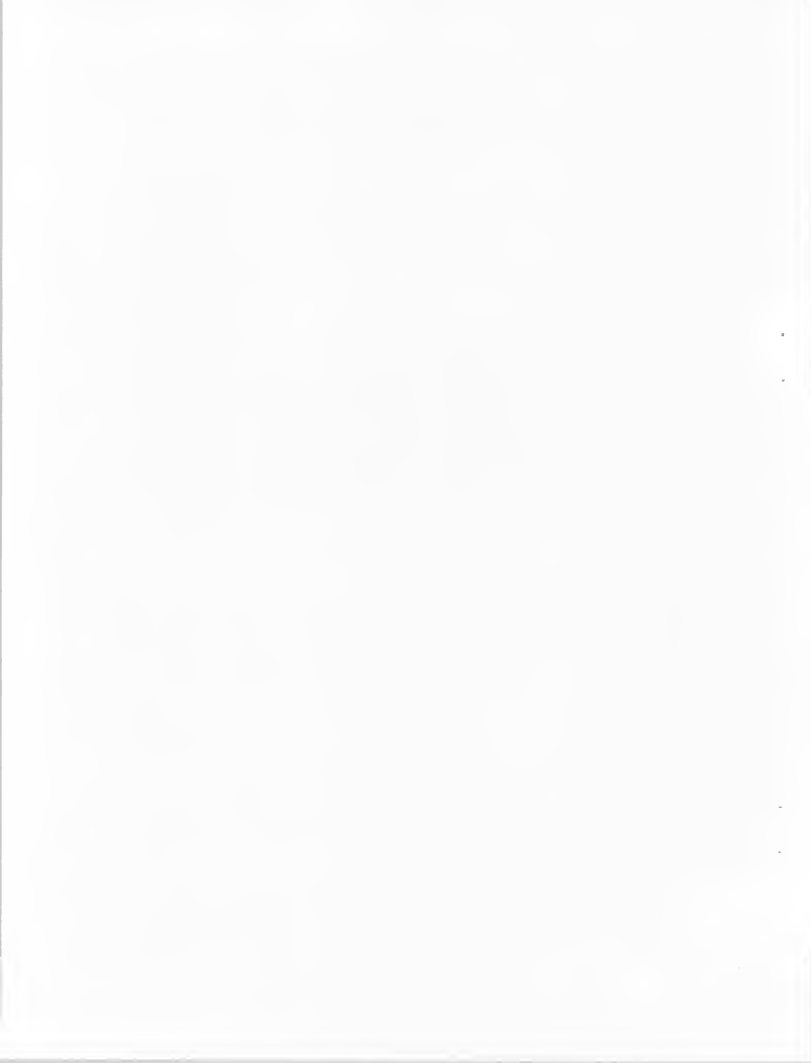
| Watershed                 | Number of<br>Data Sites | This Year as Percent of |         |
|---------------------------|-------------------------|-------------------------|---------|
|                           |                         | Last Year               | Average |
| KOOTENAI MAINSTEM         | 8                       | 101                     | 87      |
| TOBACCO                   | 3                       | 117                     | 115     |
| FISHER                    | 5                       | 102                     | 75      |
| YAAK                      | 7                       | 123                     | 99      |
| KOOTENAI ab BONNERS FERRY | 43                      | 119                     | 103     |
| KOOTENAI in MONTANA       | 22                      | 109                     | 92      |



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1974.





FLATHEAD RIVER BASIN as of April 1, 1996

Snowpack conditions in the Flathead River Basin of Montana and Canada were slightly near average. Snow water content for the Flathead in Montana was 3 percent above average; 28 percent above last year; and decreased 7 percent during March. Snow water content for the Flathead in Canada was 8 percent above average; 21 percent above last year; and decreased 10 percent during March.

Mountain precipitation during March was 32 percent below average and 19 percent below last year. Valley precipitation during March was 9 percent below average and 18 percent below last year. Mountain and valley water year precipitation, beginning October 1, 1995, was 36 percent above average and 32 percent above last year.

Reservoir storage, on the last day of March, was 7 percent above average and 20 percent above last year. Combined Camas reservoir storage was 17 percent above average and 87 percent above last year; the combined Mission Valley reservoir storage was 2 percent above average and 42 percent above last year; Hungry Horse storage was 7 percent below average and 2 percent above last year; and Flathead Lake storage was 47 percent above average and 68 percent above last year.

Streamflows, for the period April through July, are forecast to be 13 percent above average and 50 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +1.4 in the North Fork Flathead River; +1.5 in the Middle Fork Flathead River; +1.1 in the South Fork Flathead River; +1.3 in the Flathead River at Columbia Falls; +1.4 in the Stillwater/Whitefish Rivers; +0.7 in the Swan River; +1.6 in the Flathead River at Polson; +1.1 in the Mission Valley; and +0.9 in the Little Bitterroot River.

Streamflow Forecasts

|              |                        | <--- Drier --- Future Conditions --- Wetter ---> |          |                   |          |          |           |
|--------------|------------------------|--|----------|-------------------|----------|----------|-----------|
| Forecast Pt  |                        | Chance of Exceeding *                            |          |                   |          |          |           |
| Forecast     |                        | 90%  | 70%      | 50% (Most Prob)   | 30%      | 10%      | 30 Yr Avg |
| Period       |                        | (1000AF)   | (1000AF) | (1000AF) (% AVG.) | (1000AF) | (1000AF) | (1000AF)  |
|              |                        |  |          |                   |          |          |           |
| NF FLATHEAD  | nr Columbia Falls      |  |          |                   |          |          |           |
| APR-JUL      |                        | 1707   | 1810     | 1880              | 113      | 1950     | 2053      |
| APR-SEP      |                        | 1561   | 2001     | 2080              | 113      | 2159     | 2607      |
|              |                        |  |          |                   |          |          | 1836      |
|              |                        |  |          |                   |          |          |           |
| MF FLATHEAD  | nr West Glacier        |  |          |                   |          |          |           |
| APR-JUL      |                        | 1409   | 1830     | 1900              | 116      | 1970     | 2375      |
| APR-SEP      |                        | 1538   | 1990     | 2070              | 116      | 2150     | 2593      |
|              |                        |  |          |                   |          |          | 1638      |
|              |                        |  |          |                   |          |          | 1788      |
|              |                        |  |          |                   |          |          |           |
| HUNGRY HORSE | Reservoir Inflow (1,2) |  |          |                   |          |          |           |
| APR-JUL      |                        | 1989   | 2302     | 2390              | 117      | 2478     | 2810      |
| APR-SEP      |                        | 2118   | 2464     | 2560              | 117      | 2656     | 2992      |
|              |                        |  |          |                   |          |          | 2051      |
|              |                        |  |          |                   |          |          | 2184      |
|              |                        |  |          |                   |          |          |           |
| FLATHEAD     | at Columbia Falls (2)  |  |          |                   |          |          |           |
| APR-JUL      |                        | 5098   | 5938     | 6160              | 112      | 6382     | 7236      |
| APR-SEP      |                        | 5543   | 6490     | 6740              | 113      | 6990     | 7867      |
|              |                        |  |          |                   |          |          | 5482      |
|              |                        |  |          |                   |          |          | 5960      |

| Forecast Pt<br>Forecast<br>Period | <--- Drier --- Future Conditions --- Wetter ---> |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |      |
|-----------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|------|
|                                   | Chance of Exceeding *                            |                 |                                      |                 |                 |                       |      |
|                                   | 90%<br>(1000AF)                                  | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |      |
| STILLWATER nr Whitefish           |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                           | 196  | 222             | 240                                  | 127             | 258             | 284                   | 189  |
| APR-SEP                           | 212  | 244             | 265                                  | 127             | 286             | 318                   | 209  |
| WHITEFISH nr Kalispell            |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                           | 105  | 117             | 125                                  | 120             | 133             | 145                   | 104  |
| APR-SEP                           | 116  | 130             | 140                                  | 121             | 150             | 164                   | 116  |
| SWAN RIVER near Bigfork           |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                           | 544  | 586             | 615                                  | 106             | 644             | 686                   | 583  |
| APR-SEP                           | 595  | 646             | 680                                  | 102             | 714             | 765                   | 665  |
| FLATHEAD Lake Inflow (1,2)        |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                           | 5879   | 6895            | 7200                                 | 113             | 7505            | 8435                  | 6390 |
| APR-SEP                           | 6372   | 7446            | 7800                                 | 113             | 8154            | 9142                  | 6926 |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

#### Reservoir Storage (1000AF) End of March

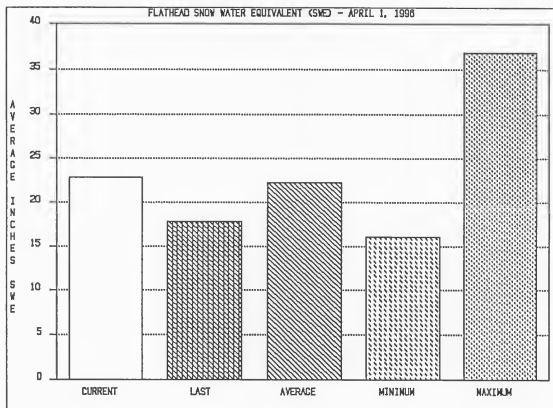
| Reservoir          | Usable<br>Capacity | *****<br>This Year | Usable Storage<br>Last Year | *****<br>Average |
|--------------------|--------------------|--------------------|-----------------------------|------------------|
|                    |                    |                    |                             |                  |
| CAMAS (4)          | 45.2               | 27.7               | 14.8                        | 23.7             |
| MISSION VALLEY (8) | 100.0              | 41.9               | 29.5                        | 40.9             |
| HUNGRY HORSE       | 3451.0             | 1893.0             | 1863.0                      | 2046.0           |
| FLATHEAD LAKE      | 1791.0             | 1105.0             | 656.4                       | 751.9            |

#### Watershed Snowpack Analysis

| Watershed             | Number of<br>Data Sites | This Year as Percent of<br>Last Year |     | Average |
|-----------------------|-------------------------|--------------------------------------|-----|---------|
|                       |                         |                                      |     |         |
| NORTH FORK in CANADA  | 3                       |                                      | 121 | 108     |
| NORTH FORK in MONTANA | 9                       |                                      | 119 | 108     |
| MIDDLE FORK           | 6                       |                                      | 133 | 107     |
| SOUTH FORK            | 9                       |                                      | 121 | 96      |
| STILLWATER-WHITEFISH  | 10                      |                                      | 122 | 103     |
| SWAN                  | 8                       |                                      | 115 | 97      |

# Watershed Snowpack Analysis (continued)

| Watershed                | Number of<br>Data Sites | This Year as<br>Last Year | Percent of<br>Average |
|--------------------------|-------------------------|---------------------------|-----------------------|
| MISSION VALLEY           | 4                       | 112                       | 102                   |
| LITTLE BITTERROOT-ASHLEY | 6                       | 186                       | 96                    |
| JOCKO                    | 4                       | 162                       | 107                   |
| FLATHEAD in MONTANA      | 40                      | 128                       | 103                   |
| FLATHEAD RIVER BASIN     | 43                      | 127                       | 103                   |



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1992.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1972.

# UPPER CLARK FORK RIVER BASIN as of April 1, 1996

Snowpack conditions in the Upper Clark Fork River Basin were slightly above average. Snow water content was 6 percent above average; 39 percent above last year; and decreased 4 percent during March.

Mountain precipitation during March was 20 percent below average and 3 percent below last year. Valley precipitation during March was 23 percent below average and 30 percent above last year. Mountain and valley water year precipitation, beginning October 1, 1995, was 26 percent above average and 36 percent above last year.

Reservoir storage, on the last day of March, was 24 percent above average and 11 percent above last year. Georgetown Lake storage was 12 percent above average and the same as last year; Lower Willow Creek storage was 78 percent above average and 17 percent above last year; and Nevada Creek storage was 48 percent above average and 54 percent above last year.

Streamflows, for the period April through July, are forecast to be 8 percent below average and 45 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +0.7 in the Clark Fork River above Rock Creek; +0.8 in the Blackfoot River; and +0.8 in the Clark Fork River above Missoula.

## Streamflow Forecasts

| Forecast Pt<br>Forecast<br>Period | <--- Drier --- Future Conditions --- Wetter ---> |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |      |
|-----------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|------|
|                                   | Chance of Exceeding *                            |                 |                                      |                 |                 |                       |      |
|                                   | 90%<br>(1000AF)                                  | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |      |
| WARM SPRINGS CK at Anaconda (2)   |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                           | 27   | 34              | 38                                   | 100             | 42              | 49                    | 38   |
| APR-SEP                           | 35   | 42              | 47                                   | 100             | 52              | 60                    | 47   |
| LITTLE BLACKFOOT nr Garrison      |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                           | 41   | 67              | 85                                   | 102             | 103             | 129                   | 83   |
| APR-SEP                           | 42   | 71              | 90                                   | 101             | 110             | 138                   | 89   |
| FLINT CK nr Southern Cross (2)    |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                           | 9.1  | 12.6            | 15.0                                 | 106             | 17.4            | 21                    | 14.2 |
| APR-SEP                           | 10.3   | 14.7            | 17.7                                 | 106             | 21              | 25                    | 16.7 |
| FLINT CK bl Boulder Ck            |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                           | 34   | 46              | 55                                   | 97              | 64              | 76                    | 57   |
| APR-SEP                           | 44   | 59              | 70                                   | 96              | 81              | 96                    | 73   |
| LOWER WILLOW CK RES Inflow        |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                           | 7.2  | 10.6            | 12.9                                 | 92              | 15.2            | 18.6                  | 14.0 |
| APR-SEP                           | 7.8  | 11.3            | 13.7                                 | 93              | 16.1            | 19.6                  | 14.8 |
| MF ROCK CREEK nr Philipsburg      |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                           | 63   | 71              | 77                                   | 117             | 83              | 91                    | 66   |
| APR-SEP                           | 69   | 79              | 85                                   | 115             | 91              | 101                   | 74   |

# Streamflow Forecasts

|                             | <--- Drier --- Future Conditions --- Wetter ---> |          |                 |          |          |          |                    |
|-----------------------------|--|----------|-----------------|----------|----------|----------|--------------------|
| Forecast Pt                 | Chance of Exceeding *                            |          |                 |          |          |          |                    |
| Forecast                    | 90%  | 70%      | 50% (Most Prob) |          | 30%      | 10%      |                    |
| Period                      | (1000AF)   | (1000AF) | (1000AF)        | (% AVG.) | (1000AF) | (1000AF) | 30 Yr Avg (1000AF) |
| ROCK CREEK near Clinton     |  |          |                 |          |          |          |                    |
| APR-JUL                     | 294  | 336      | 365             | 123      | 394      | 436      | 296                |
| APR-SEP                     | 330  | 378      | 410             | 123      | 442      | 490      | 333                |
| NEVADA CK nr Finn           |  |          |                 |          |          |          |                    |
| APR-JUL                     | 11.2   | 15.0     | 17.5            | 92       | 20       | 24       | 19.1               |
| APR-SEP                     | 12.3   | 16.3     | 19.0            | 91       | 22       | 26       | 21                 |
| CLEARWATER nr Clearwater    |  |          |                 |          |          |          |                    |
| APR-JUL                     | 171  | 182      | 190             | 111      | 198      | 209      | 172                |
| APR-SEP                     | 181  | 192      | 200             | 111      | 208      | 219      | 181                |
| BLACKFOOT RIVER near Bonner |  |          |                 |          |          |          |                    |
| APR-JUL                     | 665  | 739      | 790             | 95       | 841      | 1077     | 835                |
| APR-SEP                     | 738  | 819      | 875             | 95       | 931      | 1195     | 926                |
| CLARK FORK ab Milltown      |  |          |                 |          |          |          |                    |
| APR-JUL                     | 502  | 537      | 625             | 96       | 713      | 776      | 652                |
| APR-SEP                     | 581  | 637      | 735             | 97       | 833      | 898      | 755                |
| CLARK FORK ab Missoula      |  |          |                 |          |          |          |                    |
| APR-JUL                     | 907  | 1270     | 1400            | 94       | 1530     | 1948     | 1487               |
| APR-SEP                     | 1025   | 1467     | 1610            | 96       | 1753     | 2202     | 1681               |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

## Reservoir Storage (1000AF) End of March

| Reservoir          | Usable<br>Capacity | ***** Usable Storage ***** |           |         |
|--------------------|--------------------|----------------------------|-----------|---------|
|                    |                    | This Year                  | Last Year | Average |
| GEORGETOWN LAKE    | 31.0               | 27.8                       | 27.9      | 24.8    |
| LOWER WILLOW CREEK | 4.9                | 4.1                        | 3.5       | 2.3     |
| NEVADA CREEK       | 12.6               | 10.8                       | 7.0       | 7.3     |

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Watershed Snowpack Analysis

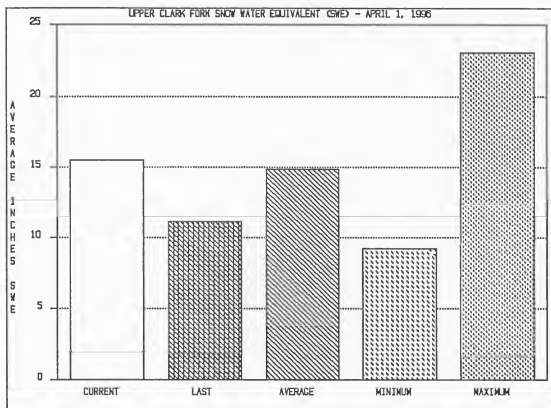
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| Watershed                 | Number of<br>Data Sites | This Year as Percent of<br>Last Year | Percent of<br>Average |
|---------------------------|-------------------------|--------------------------------------|-----------------------|
| CLARK FORK ab FLINT CREEK | 16                      | 121                                  | 106                   |
| FLINT CREEK               | 7                       | 130                                  | 107                   |
| ROCK CREEK                | 6                       | 126                                  | 111                   |
| CLARK FORK ab BLACKFOOT   | 25                      | 126                                  | 108                   |
| BLACKFOOT                 | 16                      | 175                                  | 104                   |
| UPPER CLARK FORK BASIN    | 39                      | 139                                  | 106                   |

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AVERAGE IS FOR THE PERIOD 1960-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1994.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1972.



BITTERROOT RIVER BASIN as of April 1, 1996

Snowpack conditions in the Bitterroot River Basin were slightly above average. Snow water content was 7 percent above average; 42 percent above last year; and decreased 11 percent during March.

Mountain precipitation during March was 34 percent below average and 25 percent below last year. Valley precipitation during March was 13 percent below average and 17 percent below last year. Mountain and valley water year precipitation, beginning October 1, 1995, was 45 percent above average and 46 percent above last year.

Reservoir storage, on the last day of March, was 59 percent above average and 67 percent above last year. Painted Rocks Lake storage was 102 percent above average and 317 percent above last year and Como storage was 21 percent above average and 11 percent below last year.

Streamflows, for the period April through July, are forecast to be 16 percent above average and 62 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +1.7 in the Bitterroot River.

Streamflow Forecasts

| Forecast Pt<br>Forecast<br>Period | <--- Drier --- Future Conditions --- Wetter ---> |                 |                                      |                 |                 |                       |
|-----------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|
|                                   | Chance of Exceeding *                            |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |
|                                   | 90%<br>(1000AF)                                  | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |
| WF BITTERROOT nr Conner (2)       |  |                 |                                      |                 |                 |                       |
| APR-JUL                           | 152  | 172             | 185                                  | 122             | 198             | 152                   |
| APR-SEP                           | 164  | 186             | 200                                  | 121             | 214             | 166                   |
| BITTERROOT nr Darby               |  |                 |                                      |                 |                 |                       |
| APR-JUL                           | 476  | 532             | 570                                  | 116             | 608             | 491                   |
| APR-SEP                           | 530  | 586             | 625                                  | 116             | 664             | 540                   |
| ROCK CK nr Darby (2)              |  |                 |                                      |                 |                 |                       |
| APR-JUL                           | 68   | 75              | 80                                   | 101             | 85              | 79                    |
| APR-SEP                           | 72   | 79              | 84                                   | 101             | 89              | 83                    |
| SKALKAHO CK nr Hamilton           |  |                 |                                      |                 |                 |                       |
| APR-JUL                           | 46   | 51              | 55                                   | 120             | 59              | 46                    |
| APR-SEP                           | 54   | 60              | 64                                   | 121             | 68              | 53                    |
| BURNT FORK CK nr Stevensville (2) |  |                 |                                      |                 |                 |                       |
| APR-JUL                           | 30   | 34              | 37                                   | 128             | 40              | 29                    |
| APR-SEP                           | 34   | 39              | 43                                   | 127             | 47              | 34                    |

Streamflow Forecasts (continued)

| Forecast Pt<br>Forecast<br>Period | <--- Drier --- Future Conditions --- Wetter ---> |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |      |
|-----------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|------|
|                                   | Chance of Exceeding *                            |                 |                                      |                 |                 |                       |      |
|                                   | 90%<br>(1000AF)                                  | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |      |
|                                   |  |                 |                                      |                 |                 |                       |      |
| BITTERROOT at Missoula            |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                           | 950  | 1427            | 1510                                 | 116             | 1593            | 2043                  | 1301 |
| APR-SEP                           | 1106   | 1571            | 1660                                 | 117             | 1749            | 2141                  | 1418 |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

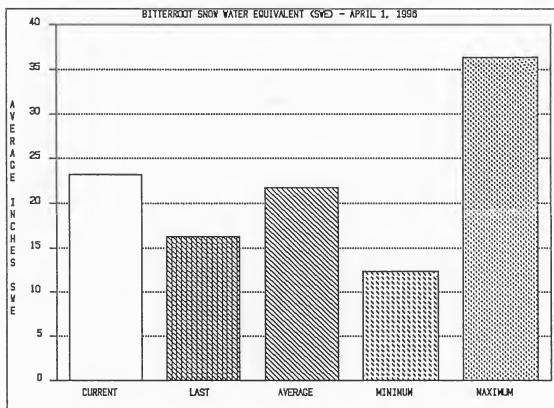
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of March

| Reservoir          | Usable<br>Capacity | *****<br>This Year | Usable Storage<br>Last Year | *****<br>Average |
|--------------------|--------------------|--------------------|-----------------------------|------------------|
| PAINTED ROCKS LAKE | 31.7               | 27.5               | 6.6                         | 13.6             |
| COMO               | 34.9               | 18.8               | 21.2                        | 15.5             |

Watershed Snowpack Analysis

| Watershed              | Number of<br>Data Sites | This Year as Percent of<br>Last Year | Percent of<br>Average |
|------------------------|-------------------------|--------------------------------------|-----------------------|
| WEST FORK BITTERROOT   | 3                       | 148                                  | 117                   |
| EAST SIDE BITTERROOT   | 6                       | 145                                  | 120                   |
| WEST SIDE BITTERROOT   | 4                       | 136                                  | 97                    |
| BITTERROOT RIVER BASIN | 12                      | 142                                  | 107                   |



AVERAGE IS FOR THE PERIOD 1960-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1992.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1972.



FIG. 1. THE JOURNAL OF THE  
ROYAL ANTHROPOLOGICAL INSTITUTE

The following text is extremely faint and illegible. It appears to be a list or a series of entries, possibly a table of contents or a list of references. The text is arranged in a columnar format, with some lines indented. Due to the low contrast, the specific content cannot be transcribed.

LOWER CLARK FORK RIVER BASIN as of April 1, 1996

Snowpack conditions in the Lower Clark Fork River Basin were slightly below average. Snow water content was 10 percent below average; 23 percent above last year; and decreased 16 percent during March.

Mountain precipitation during March was 36 percent below average and 31 percent below last year. Valley precipitation during March was 32 percent below average and 40 percent below last year. Mountain and valley water year precipitation, beginning October 1, 1995, was 44 percent above average and 43 percent above last year.

Noxon Rapids storage, on the last day of March, was 4 percent below average and 26 percent below last year.

Streamflows, for the period April through July, are forecast to be 9 percent above average and 58 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +1.0 in the Clark Fork River below Bitterroot River and +1.4 in the Clark Fork River below Flathead River.

Streamflow Forecasts

| Forecast Pt<br>Forecast<br>Period | <--- Drier --- Future Conditions --- Wetter ---> |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |       |
|-----------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|-------|
|                                   | Chance of Exceeding *                            |                 |                                      |                 |                 |                       |       |
|                                   | 90%<br>(1000AF)                                  | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |       |
| CLARK FORK ab Missoula            |  |                 |                                      |                 |                 |                       |       |
| APR-JUL                           | 907  | 1270            | 1400                                 | 94              | 1530            | 1948                  | 1487  |
| APR-SEP                           | 1025   | 1467            | 1610                                 | 96              | 1753            | 2202                  | 1681  |
| CLARK FORK bl Missoula            |  |                 |                                      |                 |                 |                       |       |
| APR-JUL                           | 2203   | 2712            | 2910                                 | 104             | 3108            | 3680                  | 2788  |
| APR-SEP                           | 2448   | 3052            | 3270                                 | 106             | 3488            | 4091                  | 3099  |
| CLARK FORK at St. Regis (1)       |  |                 |                                      |                 |                 |                       |       |
| APR-JUL                           | 2838   | 3429            | 3730                                 | 101             | 4031            | 4755                  | 3686  |
| APR-SEP                           | 3139   | 3876            | 4210                                 | 103             | 4544            | 5281                  | 4095  |
| CLARK FORK nr Plains (1,2)        |  |                 |                                      |                 |                 |                       |       |
| APR-JUL                           | 9126   | 10552           | 11200                                | 107             | 11848           | 13274                 | 10450 |
| APR-SEP                           | 10019  | 11588           | 12300                                | 107             | 13012           | 14581                 | 11470 |
| THOMPSON RIVER nr Thompson Falls  |  |                 |                                      |                 |                 |                       |       |
| APR-JUL                           | 195  | 222             | 240                                  | 112             | 258             | 285                   | 214   |
| APR-SEP                           | 222  | 251             | 270                                  | 113             | 289             | 318                   | 240   |
| PROSPECT CREEK at Thompson Falls  |  |                 |                                      |                 |                 |                       |       |
| APR-JUL                           | 98   | 108             | 115                                  | 94              | 122             | 132                   | 123   |
| APR-SEP                           | 105  | 116             | 123                                  | 93              | 130             | 141                   | 132   |

Streamflow Forecasts (continued)

| Forecast Pt<br>Forecast<br>Period | <--- Drier --- Future Conditions --- Wetter ---> |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |
|-----------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|
|                                   | ----- Chance of Exceeding * -----                |                 |                                      |                 |                 |                       |
|                                   | 90%<br>(1000AF)                                  | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |
|                                   |  |                 |                                      |                 |                 |                       |
| CLARK FK at Whitehorse Rpds (1,2) |  |                 |                                      |                 |                 |                       |
| APR-JUL                           | 9590   | 11247           | 12000                                | 102             | 12753           | 14410                 |
| APR-SEP                           | 10548  | 12372           | 13200                                | 102             | 14028           | 15852                 |
|                                   |  |                 |                                      |                 |                 | 11730                 |
|                                   |  |                 |                                      |                 |                 | 12910                 |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

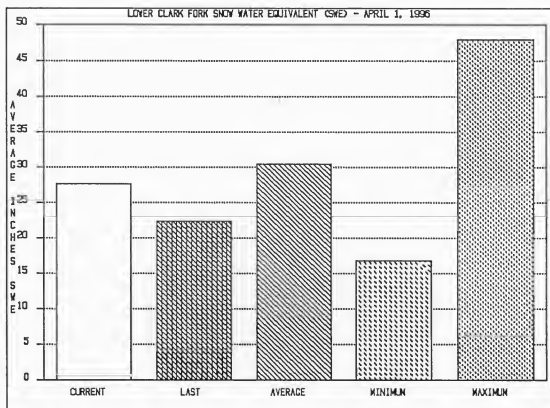
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of March

| Reservoir    | Usable<br>Capacity | *****<br>This Year | Usable Storage<br>Last Year | *****<br>Average |
|--------------|--------------------|--------------------|-----------------------------|------------------|
| NOXON RAPIDS | 335.0              | 222.2              | 301.0                       | 231.3            |

LOWER CLARK FORK RIVER BASIN  
Watershed Snowpack Analysis - April 1, 1996

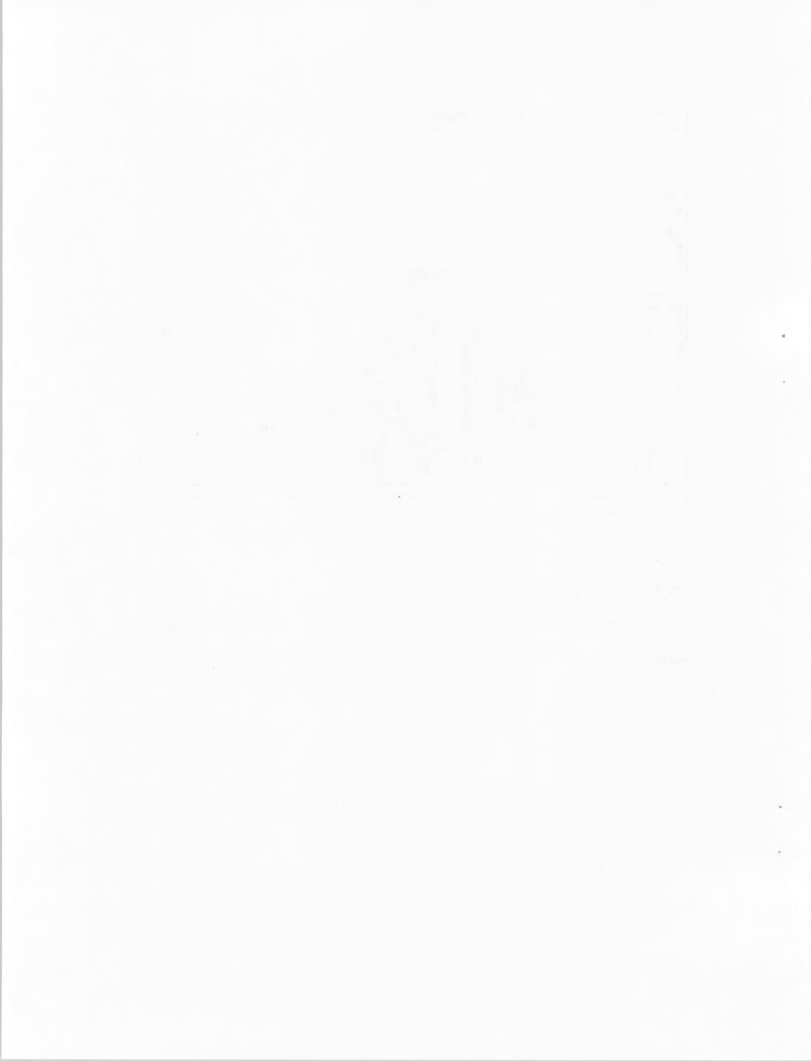
| Watershed        | Number of<br>Data Sites | This Year as Percent of<br>Last Year | Average |
|------------------|-------------------------|--------------------------------------|---------|
| LOWER CLARK FORK | 13                      | 126                                  | 89      |



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1972.





## JEFFERSON RIVER BASIN as of April 1, 1996

Snowpack conditions in the Jefferson River Basin were above average. Snow water content was 15 percent above average; 5 percent above last year; and decreased 4 percent during March. Several data sites are ranking very high for this time of year and are as follows: Calvert Creek ranks fifth highest in 35 years; Elk Horn Springs is seventh highest in 58 years; Gold Stone ranks sixth in 49 years; Mudd Lake ranks third highest in 36 years; Mule Creek has set a new record with 22.0 inches of snow water exceeding the 18.6 inches of snow water in 1982; and Palisade Creek ranks fourth highest in 36 year.

Mountain precipitation during March was 15 percent below average and 43 percent below last year. Valley precipitation during March was 9 percent above average and 29 percent below last year. Mountain and valley water year precipitation, beginning October 1, 1995, was 18 percent above average and 2 percent below last year.

Reservoir storage, on the last day of March, was 11 percent above average and 21 percent above last year. Lima storage was 57 percent above average and 93 percent above last year; Clark Canyon storage was 2 percent above average and 10 percent above last year; and Ruby River storage was 2 percent above average and 6 percent above last year.

Streamflows, for the period April through July, are forecast to be 18 percent above average and 12 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +1.7 in the Jefferson River; +1.8 in the Beaverhead River; 0.0 in the Ruby River; +2.1 in the Big Hole River; and +0.7 in the Boulder River.

## Streamflow Forecasts

| Forecast Pt<br>Forecast<br>Period | <--- Drier --- Future Conditions --- Wetter ---> |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |     |
|-----------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|-----|
|                                   | Chance of Exceeding *                            |                 |                                      |                 |                 |                       |     |
|                                   | 90%<br>(1000AF)                                  | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |     |
| RED ROCK RIVER near Monida (2)    |  |                 |                                      |                 |                 |                       |     |
| APR-JUL                           | 79   | 90              | 97                                   | 100             | 104             | 115                   | 97  |
| APR-SEP                           | 82   | 96              | 105                                  | 100             | 114             | 128                   | 105 |
| BEAVERHEAD RIVER near Grant (2)   |  |                 |                                      |                 |                 |                       |     |
| APR-JUL                           | 133  | 155             | 170                                  | 129             | 185             | 207                   | 132 |
| APR-SEP                           | 134  | 173             | 200                                  | 129             | 227             | 266                   | 155 |
| BEAVERHEAD RIVER at Barretts (2)  |  |                 |                                      |                 |                 |                       |     |
| APR-JUL                           | 177  | 197             | 210                                  | 122             | 223             | 243                   | 172 |
| APR-SEP                           | 208  | 230             | 245                                  | 121             | 260             | 282                   | 203 |
| RUBY RIVER near Alder             |  |                 |                                      |                 |                 |                       |     |
| APR-JUL                           | 49   | 66              | 77                                   | 93              | 89              | 105                   | 83  |
| APR-SEP                           | 59   | 79              | 92                                   | 93              | 106             | 125                   | 99  |
| BIG HOLE RIVER near Melrose       |  |                 |                                      |                 |                 |                       |     |
| APR-JUL                           | 607  | 710             | 780                                  | 122             | 850             | 953                   | 641 |
| APR-SEP                           | 666  | 776             | 850                                  | 122             | 924             | 1034                  | 697 |

# Streamflow Forecasts (continued)

| Forecast Pt<br>Forecast<br>Period    | ← Drier — Future Conditions — Wetter → |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |      |
|--------------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|------|
|                                      | Chance of Exceeding *                  |                 |                                      |                 |                 |                       |      |
|                                      | 90%<br>(1000AF)                        | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |      |
| BOULDER RIVER near Boulder           |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                              | 65                                     | 80              | 90                                   | 106             | 100             | 115                   | 85   |
| APR-SEP                              | 70                                     | 85              | 95                                   | 104             | 105             | 121                   | 91   |
| WILLOW CREEK near Harrison           |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                              | 12.1                                   | 16.8            | 20                                   | 113             | 23              | 28                    | 17.7 |
| APR-SEP                              | 12.8                                   | 18.3            | 22                                   | 110             | 26              | 31                    | 20   |
| JEFFERSON RIVER near Three Forks (2) |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                              | 832                                    | 992             | 1100                                 | 120             | 1208            | 1368                  | 920  |
| APR-SEP                              | 927                                    | 1096            | 1210                                 | 120             | 1324            | 1493                  | 1012 |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

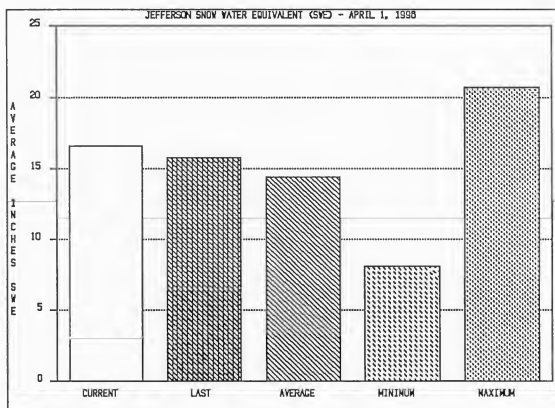
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

## Reservoir Storage (1000AF) End of March

| Reservoir    | Usable<br>Capacity | *****<br>This Year | Usable Storage<br>Last Year | *****<br>Average |
|--------------|--------------------|--------------------|-----------------------------|------------------|
| LIMA         | 84.0               | 57.8               | 30.0                        | 36.9             |
| CLARK CANYON | 255.6              | 156.7              | 143.1                       | 153.6            |
| RUBY RIVER   | 38.8               | 31.9               | 30.1                        | 31.2             |

## Watershed Snowpack Analysis

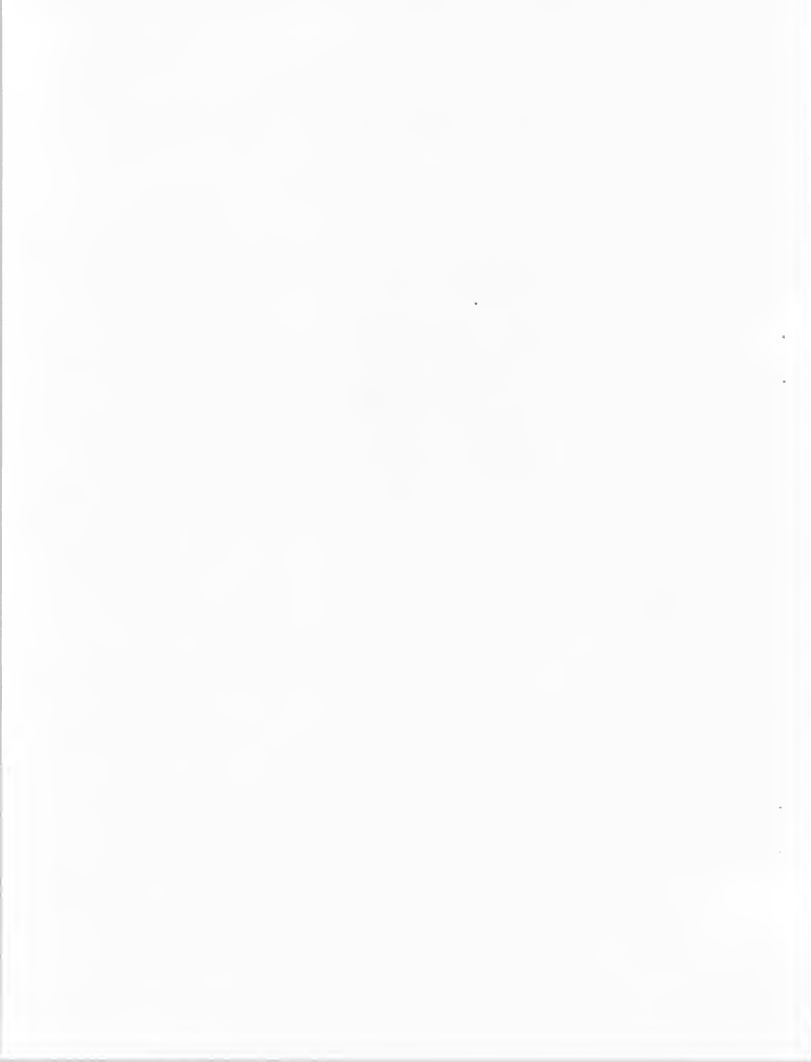
| Watershed             | Number of<br>Data Sites | This Year as Percent of<br>Last Year | Average |
|-----------------------|-------------------------|--------------------------------------|---------|
| BEAVERHEAD            | 17                      | 91                                   | 112     |
| RUBY                  | 10                      | 85                                   | 106     |
| BIGHOLE               | 21                      | 124                                  | 123     |
| BOULDER               | 9                       | 101                                  | 106     |
| JEFFERSON RIVER BASIN | 47                      | 105                                  | 115     |



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1972.



MADISON RIVER BASIN as of April 1, 1996

Snowpack conditions in the Madison River Basin were above average. Snow water content was 13 percent above average; 8 percent below last year; and the same percentage as on March 1.

Mountain precipitation during March was 8 percent below average and 41 percent below last year. Valley precipitation during March was 1 percent below average and 53 percent below last year. Mountain and valley water year precipitation, beginning October 1, 1995, was 16 percent above average and 10 percent below last year.

Reservoir storage, on the last day of March, was 2 percent above average and 3 percent above last year. Ennis Lake storage was 11 percent below average and 4 percent below last year and Hebgen Lake storage was 4 percent above average and 3 percent above last year.

Streamflows, for the period April through July, are forecast to be 13 percent above average and 5 percent below last years forecasts.

Surface Water Supply Index (SWSI) was +1.7 in the Madison River.

Streamflow Forecasts

|                                   | <== Drier == Future Conditions == Wetter ==> |          |                   |          |          |           |
|-----------------------------------|--|----------|-------------------|----------|----------|-----------|
| Forecast Pt                       | Chance of Exceeding *                        |          |                   |          |          |           |
| Forecast                          | 90%  | 70%      | 50% (Most Prob)   | 30%      | 10%      | 30 Yr Avg |
| Period                            | (1000AF)                                     | (1000AF) | (1000AF) (% AVG.) | (1000AF) | (1000AF) | (1000AF)  |
| MADISON RIVER near Grayling (2)   |  |          |                   |          |          |           |
| APR-JUL                           | 377  | 408      | 430               | 113      | 452      | 483       |
| APR-SEP                           | 486  | 524      | 550               | 113      | 576      | 614       |
| MADISON RIVER near McAllister (2) |  |          |                   |          |          |           |
| APR-JUL                           | 666  | 716      | 750               | 113      | 784      | 834       |
| APR-SEP                           | 848  | 903      | 940               | 113      | 977      | 1032      |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

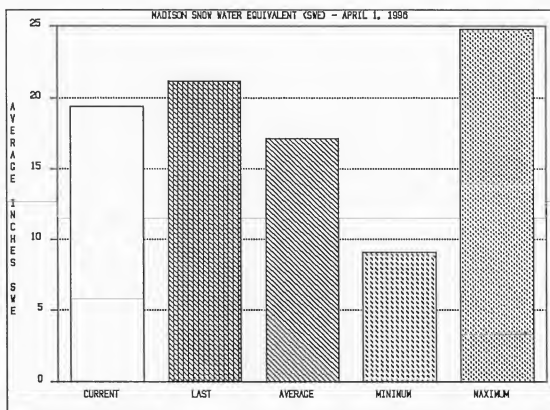
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of March

| Reservoir   | Usable<br>Capacity | ***** Usable Storage ***** |           |         |
|-------------|--------------------|----------------------------|-----------|---------|
|             |                    | This Year                  | Last Year | Average |
| ENNIS LAKE  | 41.0               | 29.6                       | 30.7      | 33.2    |
| HEBGEN LAKE | 377.5              | 255.8                      | 247.7     | 246.6   |

# Watershed Snowpack Analysis ✓

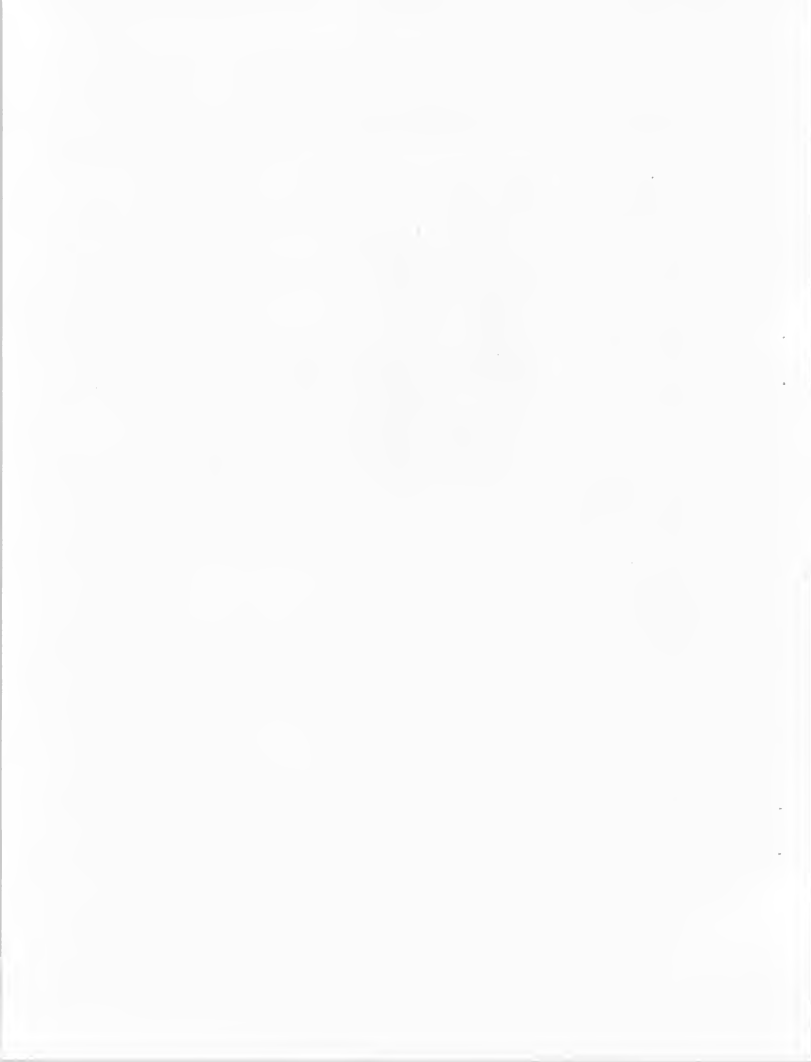
| Watershed                 | Number of<br>Data Sites | This Year as Percent of<br>Last Year | Percent of<br>Average |
|---------------------------|-------------------------|--------------------------------------|-----------------------|
| MADISON above HEBGEN LAKE | 6                       | 91                                   | 120                   |
| MADISON below HEBGEN LAKE | 11                      | 93                                   | 109                   |
| MADISON RIVER BASIN       | 17                      | 92                                   | 113                   |



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1974.





GALLATIN RIVER BASIN as of April 1, 1996

Snowpack conditions in the Gallatin River Basin were near average. Snow water content was 5 percent above average; 6 percent above last year; and decreased 1 percent during March.

Mountain precipitation during March was 11 percent below average and 35 percent below last year. Valley precipitation during March was 66 percent below average and 81 percent below last year. Mountain and valley water year precipitation, beginning October 1, 1995, was 15 percent above average and 6 percent above last year.

Middle Creek storage, on the last day of March, was 46 percent above average and 7 percent above last year.

Streamflows, for the period April through July, are forecast to be 8 percent above average and 4 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +1.1 in the Gallatin River.

Streamflow Forecasts

| Forecast Pt<br>Forecast<br>Period   | ← Drier      Future Conditions      Wetter → |                 |                             |          |                 |                 | 30 Yr Avg<br>(1000AF) |
|-------------------------------------|--|-----------------|-----------------------------|----------|-----------------|-----------------|-----------------------|
|                                     | Chance of Exceeding *                        |                 |                             |          |                 |                 |                       |
|                                     | 90%<br>(1000AF)                              | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) | (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |
| GALLATIN RIVER near Gateway         |  |                 |                             |          |                 |                 |                       |
| APR-JUL                             | 424  | 463             | 490                         | 111      | 517             | 556             | 441                   |
| APR-SEP                             | 504  | 546             | 575                         | 111      | 604             | 646             | 518                   |
| E & W FK HYALITE CREEK near Bozeman |  |                 |                             |          |                 |                 |                       |
| APR-JUL                             | 16.9   | 19.3            | 21                          | 91       | 23              | 25              | 23                    |
| APR-SEP                             | 19.8   | 22              | 24                          | 92       | 26              | 28              | 26                    |
| HYALITE CREEK near Bozeman (2)      |  |                 |                             |          |                 |                 |                       |
| APR-JUL                             | 29   | 33              | 36                          | 100      | 39              | 43              | 36                    |
| APR-SEP                             | 34   | 39              | 42                          | 100      | 45              | 50              | 42                    |
| GALLATIN RIVER at Logan (2)         |  |                 |                             |          |                 |                 |                       |
| APR-JUL                             | 398  | 479             | 535                         | 107      | 591             | 672             | 498                   |
| APR-SEP                             | 482  | 567             | 625                         | 108      | 683             | 768             | 581                   |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

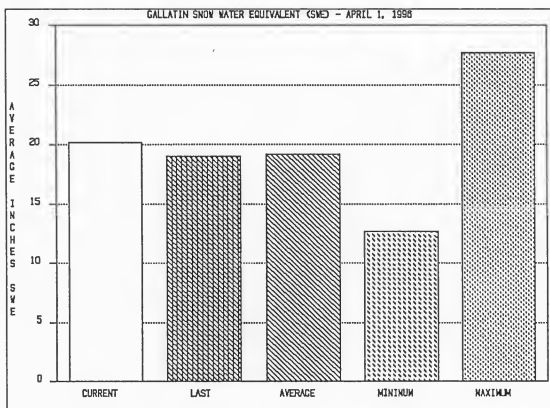
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

GALLATIN RIVER BASIN  
Reservoir Storage (1000AF) End of March

| Reservoir    | Usable<br>Capacity | *****<br>This Year | Usable Storage<br>Last Year | *****<br>Average |
|--------------|--------------------|--------------------|-----------------------------|------------------|
| MIDDLE CREEK | 10.2               | 6.0                | 5.6                         | 4.1              |

Watershed Snowpack Analysis

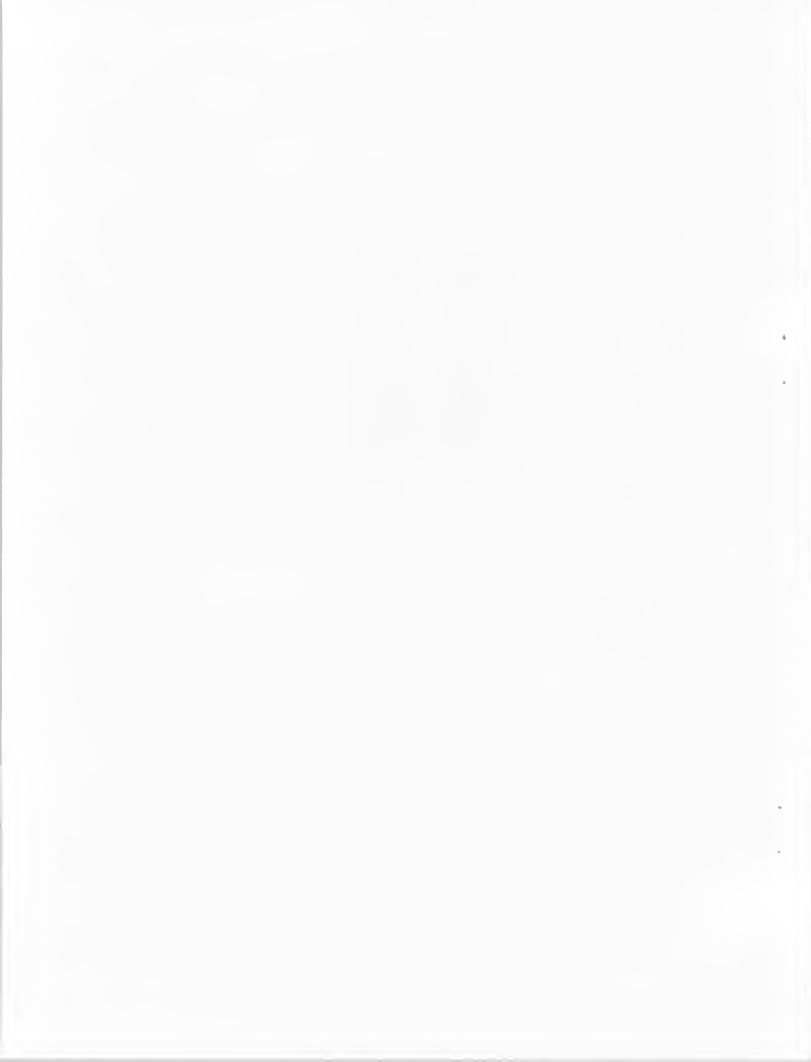
| Watershed            | Number of<br>Data Sites | This Year as Percent of<br>Last Year | Percent of<br>Average |
|----------------------|-------------------------|--------------------------------------|-----------------------|
| UPPER GALLATIN       | 7                       | 105                                  | 115                   |
| HYALITE              | 5                       | 110                                  | 97                    |
| BRIDGER              | 3                       | 104                                  | 92                    |
| GALLATIN RIVER BASIN | 15                      | 106                                  | 105                   |



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1987.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1971.



# MISSOURI MAINSTEM RIVER BASIN as of April 1, 1996

Snowpack conditions in the Mainstem Missouri River Basin were near average. Snow water content was 3 percent below average; 29 percent above last year; and decreased 5 percent during March.

Mountain precipitation during March was 19 percent below average and 21 percent below last year. Valley precipitation during March was 8 percent above average and 14 percent below last year. Mountain and valley water year precipitation, beginning October 1, 1995, was 11 percent below average and 10 percent below last year.

Reservoir storage, on the last day of March, was 4 percent below average and 5 percent below last year. Canyon Ferry Lake storage was 6 percent below average and 6 percent below last year; Helena Valley storage was 40 percent above average and 40 percent above last year; Lake Helena storage was 9 percent above average and 2 percent above last year; Hauser & Helena storage was 4 percent above average and the same as last year; Holter Lake storage was 21 percent above average and the same as last year; and Fort Peck Lake storage was 11 percent above average and 15 percent above last year.

Streamflows, for the period April through July, are forecast to be 17 percent above average and 15 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +1.6 in the Missouri River above Canyon Ferry; +1.0 in the Missouri River below Canyon Ferry; +1.8 in the Missouri River above Ft. Peck; and +1.6 in the Missouri River below Ft. Peck.

## Streamflow Forecasts

|                                   | ◀ Drier      Future Conditions      Wetter ▶ |          |                   |          |          |           |      |
|-----------------------------------|--|----------|-------------------|----------|----------|-----------|------|
| Forecast Pt                       | Chance of Exceeding *                        |          |                   |          |          |           |      |
| Forecast                          | 90%  | 70%      | 50% (Most Prob)   | 30%      | 10%      | 30 Yr Avg |      |
| Period                            | (1000AF)                                     | (1000AF) | (1000AF) (% AVG.) | (1000AF) | (1000AF) | (1000AF)  |      |
|                                   |  |          |                   |          |          |           |      |
| MISSOURI RIVER at Toston (2)      |  |          |                   |          |          |           |      |
| APR-JUL                           | 1654   | 2069     | 2350              | 113      | 2631     | 3046      | 2075 |
| APR-SEP                           | 2223   | 2456     | 2750              | 114      | 3044     | 3286      | 2416 |
|                                   |  |          |                   |          |          |           |      |
| PRICKLY PEAR CREEK near Clancy    |  |          |                   |          |          |           |      |
| APR-JUL                           | 7.6  | 16.8     | 23                | 100      | 29       | 38        | 23   |
| APR-SEP                           | 9.6  | 20       | 27                | 100      | 34       | 44        | 27   |
|                                   |  |          |                   |          |          |           |      |
| SUN RIVER at Gibson Dam (2)       |  |          |                   |          |          |           |      |
| APR-JUL                           | 378  | 454      | 505               | 106      | 556      | 632       | 478  |
| APR-SEP                           | 421  | 501      | 555               | 106      | 609      | 689       | 526  |
|                                   |  |          |                   |          |          |           |      |
| MISSOURI RIVER at Fort Benton (2) |  |          |                   |          |          |           |      |
| APR-JUL                           | 2411   | 3119     | 3600              | 117      | 4081     | 4789      | 3087 |
| APR-SEP                           | 3273   | 3764     | 4290              | 117      | 4816     | 5296      | 3678 |
|                                   |  |          |                   |          |          |           |      |
| MARIAS RIVER near Shelby (2)      |  |          |                   |          |          |           |      |
| APR-JUL                           | 369  | 456      | 515               | 115      | 574      | 661       | 447  |
| APR-SEP                           | 396  | 485      | 545               | 112      | 605      | 694       | 487  |

Streamflow Forecasts (continued)

| Forecast Pt<br>Forecast<br>Period  | <--- Drier --- Future Conditions --- Wetter --> |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |       |
|------------------------------------|---|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|-------|
|                                    | Chance of Exceeding * -----                     |                 |                                      |                 |                 |                       |       |
|                                    | 90%<br>(1000AF)                                 | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |       |
| MISSOURI RIVER at Virgelle (2)     |   |                 |                                      |                 |                 |                       |       |
| APR-JUL                            | 2892  | 3677            | 4210                                 | 117             | 4743            | 5528                  | 3595  |
| APR-SEP                            | 3753  | 4343            | 4940                                 | 117             | 5537            | 6326                  | 4217  |
| MISSOURI RIVER near Landusky (2)   |   |                 |                                      |                 |                 |                       |       |
| APR-JUL                            | 3320  | 4127            | 4675                                 | 120             | 5223            | 6030                  | 3897  |
| APR-SEP                            | 4168  | 4916            | 5504                                 | 120             | 6092            | 7099                  | 4580  |
| MISSOURI RIVER below Fort Peck (2) |   |                 |                                      |                 |                 |                       |       |
| APR-JUL                            | 3442  | 4221            | 4750                                 | 118             | 5279            | 6058                  | 4015  |
| APR-SEP                            | 3931  | 4888            | 5460                                 | 122             | 6032            | 6924                  | 4467  |
| LAKE SAKAKAWEA Inflow (2)          |   |                 |                                      |                 |                 |                       |       |
| APR-JUL                            | 10898   | 12069           | 12865                                | 130             | 13661           | 14832                 | 9897  |
| APR-SEP                            | 11686   | 13787           | 14750                                | 130             | 15713           | 18154                 | 11346 |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of March

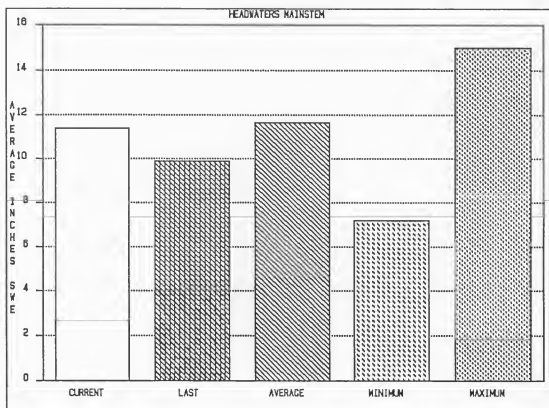
| Reservoir            | Usable<br>Capacity | ***** Usable Storage ***** |           |         |
|----------------------|--------------------|----------------------------|-----------|---------|
|                      |                    | This Year                  | Last Year | Average |
| CANYON FERRY LAKE    | 2043.0             | 1401.0                     | 1488.0    | 1489.0  |
| HELENA VALLEY        | 9.2                | 5.6                        | 4.0       | 4.0     |
| LAKE HELENA          | 10.4               | 11.1                       | 10.9      | 10.2    |
| HAUSER & HELENA      | 61.9               | 63.2                       | 63.1      | 61.0    |
| HOLTER LAKE          | 81.9               | 81.2                       | 81.0      | 67.2    |
| FORT PECK LAKE (MAF) | 18.9               | 16.6                       | 14.4      | 14.9    |

Watershed Snowpack Analysis

| Watershed               | Number of<br>Data Sites | This Year as Percent of |         |
|-------------------------|-------------------------|-------------------------|---------|
|                         |                         | Last Year               | Average |
| HEADWATERS MAINSTEM     | 9                       | 115                     | 98      |
| SUN-TETON-MARIAS BASINS | 14                      | 166                     | 101     |

Watershed Snowpack Analysis (continued)

| Watershed                 | Number of<br>Data Sites | This Year as<br>Last Year | Percent of<br>Average |
|---------------------------|-------------------------|---------------------------|-----------------------|
| SMITH-JUDITH-MUSSELSHELL  | 16                      | 106                       | 94                    |
| MAINSTEM ab FORT PECK RES | 38                      | 130                       | 98                    |
| MILK                      | 5                       | 84                        | 71                    |
| MISSOURI MAINSTEM BASIN   | 43                      | 129                       | 97                    |



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1961.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1972.



## SMITH-JUDITH-MUSSELSHELL RIVER BASINS as of April 1, 1996

Snowpack conditions in the Smith-Judith-Musselshell River Basins were slightly below average. Snow water content was 6 percent below average; 6 percent above last year; and decreased 1 percent during March.

Mountain and valley precipitation for the combined basins was 10 percent above average and 11 percent below last year and the water year precipitation was 14 percent above average and 16 percent above last year. Smith River mountain and valley precipitation during March was 4 percent above average and the same as last year and water year precipitation was 20 percent above average and 31 percent above last year; Judith River mountain and valley precipitation during March was 31 percent above average and 18 percent below last year and water year precipitation was 3 percent above average and the same as last year; and the Musselshell River mountain and valley March precipitation was 16 percent below average and 26 percent below last year and the water year precipitation was 18 percent above average and 12 percent above last year.

Reservoir storage, on the last day of March, was 39 percent above average and 31 percent above last year. Smith River storage was 16 percent above average and 43 percent above last year; Bair storage was 13 percent above average and 29 percent above last year; Martinsdale storage was 55 percent above average and 138 percent above last year; and Deadman's Basin was 42 percent above average and 18 percent above last year.

Streamflows, for the period April through July, are forecast to be 6 percent above average and 29 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +0.9 in the Smith River and +1.0 in the Musselshell River.

## Streamflow Forecasts

| Forecast Pt<br>Forecast<br>Period    | ← Drier      Future Conditions      Wetter → |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |      |
|--------------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|------|
|                                      | Chance of Exceeding *                        |                 |                                      |                 |                 |                       |      |
|                                      | 90%<br>(1000AF)                              | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |      |
| SMITH RIVER near Fort Logan          |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                              | 48   | 61              | 70                                   | 113             | 79              | 92                    | 62   |
| APR-SEP                              | 61   | 73              | 82                                   | 112             | 91              | 103                   | 73   |
| SHEEP CREEK nr White Sulphur Springs |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                              | 16.1   | 18.6            | 20                                   | 112             | 22              | 25                    | 18.1 |
| APR-SEP                              | 18.9   | 22              | 24                                   | 112             | 25              | 28                    | 21   |
| NF MUSSELSHELL near Delpine          |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                              | 2.34   | 3.63            | 4.50                                 | 94              | 5.37            | 6.66                  | 4.80 |
| APR-SEP                              | 2.88   | 4.32            | 5.30                                 | 95              | 6.28            | 7.72                  | 5.60 |

### Streamflow Forecasts

|                                | <--- Drier --- Future Conditions --- Wetter ---> |          |                   |          |          |           |
|--------------------------------|--|----------|-------------------|----------|----------|-----------|
| Forecast Pt                    | Chance of Exceeding *                            |          |                   |          |          |           |
| Forecast                       | 90%  | 70%      | 50% (Most Prob)   | 30%      | 10%      | 30 Yr Avg |
| Period                         | (1000AF)   | (1000AF) | (1000AF) (% AVG.) | (1000AF) | (1000AF) | (1000AF)  |
| SF MUSSELSHELL abv Martinsdale |  |          |                   |          |          |           |
| APR-JUL                        | 22   | 39       | 51                | 98       | 63       | 80        |
| APR-SEP                        | 25   | 43       | 55                | 98       | 67       | 86        |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

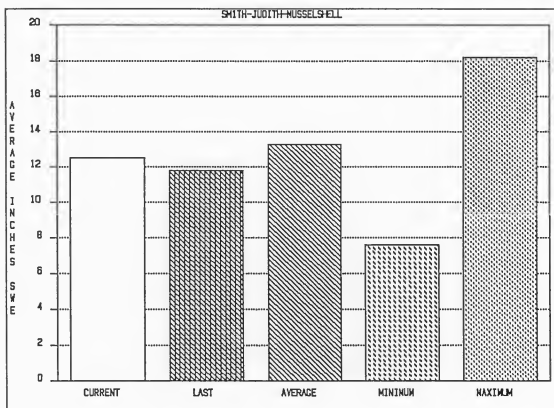
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

### Reservoir Storage (1000AF) End of March

| Reservoir       | Usable<br>Capacity | ***** Usable Storage ***** |           |         |
|-----------------|--------------------|----------------------------|-----------|---------|
|                 |                    | This Year                  | Last Year | Average |
| SMITH RIVER     | 10.6               | 8.6                        | 6.0       | 7.4     |
| NEWLAN CREEK    |                    | NO REPORT                  |           |         |
| BAIR            | 7.0                | 5.3                        | 4.1       | 4.7     |
| MARTINSDALE     | 23.1               | 15.0                       | 6.3       | 9.7     |
| DEADMAN'S BASIN | 72.2               | 71.2                       | 60.2      | 50.1    |

### Watershed Snowpack Analysis

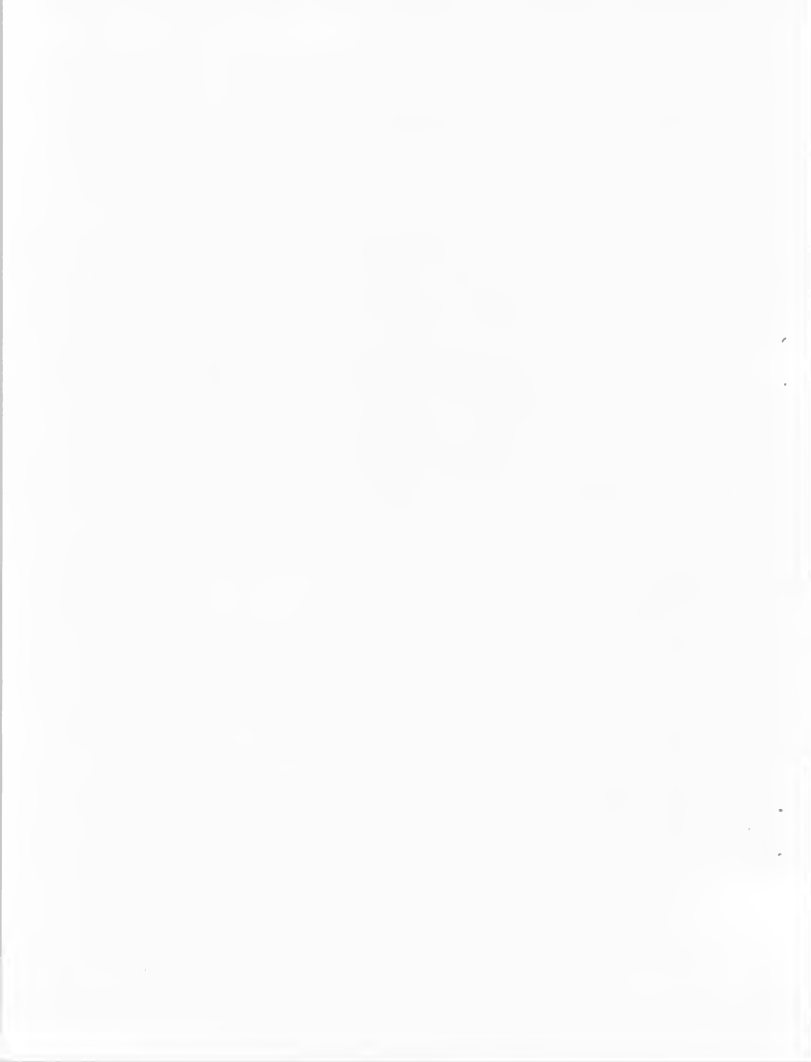
| Watershed                | Number of<br>Data Sites | This Year as Percent of |         |
|--------------------------|-------------------------|-------------------------|---------|
|                          |                         | Last Year               | Average |
| SMITH                    | 7                       | 122                     | 103     |
| JUDITH                   | 8                       | 99                      | 91      |
| MUSSELSHELL              | 8                       | 108                     | 94      |
| SMITH-JUDITH-MUSSELSHELL | 16                      | 106                     | 94      |



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1992.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1970.



# SUN-TETON-MARIAS RIVER BASINS as of April 1, 1996

Snowpack conditions in the Sun-Teton-Marias River Basins were near average. Snow water content was 1 percent above average; 66 percent above last year; and decreased 8 percent during March.

Combined mountain and valley precipitation for the three basins during March was 7 percent above average and 138 percent above last year with the water year precipitation, beginning October 1, 1995, 31 percent above average and 45 percent above last year. Mountain and valley precipitation in the Sun River was 11 percent above average and 131 percent above last year with the water year precipitation 32 percent above average and 44 percent above last year; in the Teton River was 16 percent above average and 143 percent above last year with the water year precipitation 45 percent above average and 67 percent above last year; and in the Marias River was 2 percent above average and 137 percent above last year with the water year precipitation 25 percent above average and 38 percent above last year.

Reservoir storage, on the last day of March, was 42 percent above average and 28 percent above last year. Gibson storage was 21 percent above average and 129 percent above last year; Fishkum storage was 107 percent above average and 145 percent above last year; Willow Creek storage was 21 percent above average and 39 percent above last year; Lower Two Medicine Lake storage was 40 percent above average and 10 percent below last year; Four Horns Lake storage was 42 percent below average and 35 percent below last year; Swift storage was 47 percent above average and 39 percent above last year; Lake Frances storage was 34 percent above average and 84 percent above last year; and Lake Elwell (Tiber) storage was 46 percent above average and 19 percent above last year.

Streamflows, for the period April through July, are forecast to be 12 percent above average and 61 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +1.4 the Sun River; +1.8 in the Teton River; +1.4 in the Marias River; and +2.2 in the Birch/Dupuyer Creeks.

## Streamflow Forecasts

|                                      | <--- Drier --- Future Conditions --- Wetter ---> |          |                   |          |          |     |           |
|--------------------------------------|--|----------|-------------------|----------|----------|-----|-----------|
| Forecast Pt                          | Chance of Exceeding *                            |          |                   |          |          |     |           |
| Forecast                             | 90%  | 70%      | 50% (Most Prob)   | 30%      | 10%      |     | 30 Yr Avg |
| Period                               | (1000AF)   | (1000AF) | (1000AF) (% AVG.) | (1000AF) | (1000AF) |     | (1000AF)  |
| SUN RIVER at Gibson Dam (2)          |  |          |                   |          |          |     |           |
| APR-JUL                              | 378  | 454      | 505               | 106      | 556      | 632 | 478       |
| APR-SEP                              | 421  | 501      | 555               | 106      | 609      | 689 | 526       |
| TWO MEDICINE RIVER near Browning (2) |  |          |                   |          |          |     |           |
| APR-JUL                              | 176  | 217      | 245               | 114      | 273      | 314 | 215       |
| APR-SEP                              | 192  | 232      | 260               | 114      | 288      | 328 | 228       |
| BADGER CREEK near Browning (2)       |  |          |                   |          |          |     |           |
| APR-JUL                              | 88   | 107      | 120               | 115      | 133      | 152 | 104       |
| APR-SEP                              | 105  | 126      | 140               | 117      | 154      | 175 | 120       |

# Streamflow Forecasts

| Forecast Pt<br>Forecast<br>Period   | <--- Drier --- Future Conditions --- Wetter ---> |                 |                                      |                 |                 |     | 30 Yr Avg<br>(1000AF) |
|-------------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----|-----------------------|
|                                     | Chance of Exceeding * -----                      |                 |                                      |                 |                 |     |                       |
|                                     | 90%<br>(1000AF)                                  | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |     |                       |
| SWIFT RESERVOIR Inflow near Dupuyer |  |                 |                                      |                 |                 |     |                       |
| APR-JUL                             | 54   | 68              | 77                                   | 113             | 87              | 101 | 68                    |
| APR-SEP                             | 66   | 80              | 90                                   | 113             | 100             | 115 | 80                    |
| DUPUYER CREEK near Valier           |  |                 |                                      |                 |                 |     |                       |
| APR-JUL                             | 2.8  | 11.8            | 18.0                                 | 116             | 24              | 33  | 15.5                  |
| APR-SEP                             | 3.7  | 13.5            | 20                                   | 116             | 27              | 37  | 17.4                  |
| CUT BANK CREEK at Cut Bank          |  |                 |                                      |                 |                 |     |                       |
| APR-JUL                             | 82   | 96              | 105                                  | 121             | 114             | 128 | 87                    |
| APR-SEP                             | 91   | 105             | 115                                  | 120             | 125             | 139 | 96                    |
| MARIAS RIVER near Shelby (2)        |  |                 |                                      |                 |                 |     |                       |
| APR-JUL                             | 369  | 456             | 515                                  | 115             | 574             | 661 | 447                   |
| APR-SEP                             | 396  | 485             | 545                                  | 112             | 605             | 694 | 487                   |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

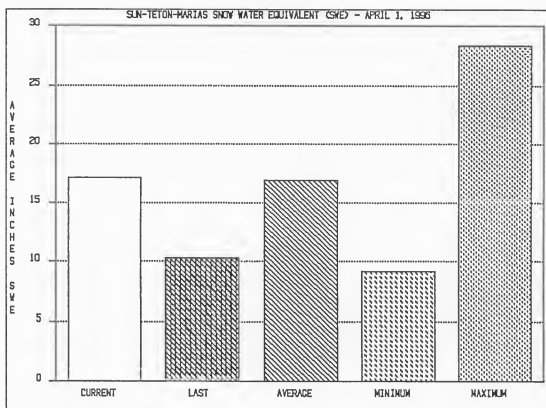
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

## Reservoir Storage (1000AF) End of March

| Reservoir               | Usable<br>Capacity | ***** Usable Storage ***** |           |         |
|-------------------------|--------------------|----------------------------|-----------|---------|
|                         |                    | This Year                  | Last Year | Average |
| GIBSON                  | 99.1               | 61.0                       | 26.6      | 50.5    |
| PISHKUN                 | 32.0               | 36.8                       | 15.0      | 17.8    |
| WILLOW CREEK            | 32.2               | 27.6                       | 19.8      | 22.8    |
| LOWER TWO MEDICINE LAKE | 11.9               | 10.5                       | 11.7      | 7.5     |
| FOUR HORNS LAKE         | 19.2               | 7.3                        | 11.3      | 12.5    |
| SWIFT                   | 30.0               | 25.3                       | 18.2      | 17.2    |
| LAKE FRANCES            | 112.0              | 96.0                       | 52.2      | 71.6    |
| LAKE ELWELL (TIBER)     | 1347.0             | 869.9                      | 733.5     | 596.7   |

# Watershed Snowpack Analysis

| Watershed               |   | Number of<br>Data Sites | This Year as Percent of<br>Last Year | Percent of<br>Average |
|-------------------------|---|-------------------------|--------------------------------------|-----------------------|
| SUN                     |   | 7                       | 210                                  | 104                   |
| TETON                   |   | 4                       | 189                                  | 109                   |
| MARIAS                  |   | 6                       | 141                                  | 98                    |
| SUN-TETON-MARIAS BASINS | 4 | 14                      | 166                                  | 101                   |



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1984.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1972.



## ST. MARY and MILK RIVER BASINS as of April 1, 1996

Snowpack conditions in the St. Mary River and Milk River Basins were near average. Snow water content in the St. Mary River Basin was 4 percent above average; 32 percent above last year; and decreased 4 percent during March. Snow water content in the Milk River Basin (Bearpaw Mountains) was 29 percent below average; 16 percent below last year; and increased 39 percent during March.

Combined Mountain and valley precipitation during March was 4 percent above average and 9 percent below last year with the water year precipitation, beginning October 1, 1995, 43 percent above average and 43 percent above last year. Mountain and Valley precipitation in the St. Mary River was 24 percent below average and 4 percent above last year and in the Milk River was 50 percent above average and 18 percent below last year.

Reservoir storage, on the last day of March, was 26 percent above average and 63 percent above last year. Lake Sherburne storage was 58 percent above average and 54 percent above last year; Fresno storage was 34 percent above average and 76 percent above last year; Beaver Creek storage was 27 percent above average and the same as last year; and Nelson storage was 12 percent below average and 48 percent above last year.

Streamflows in the St. Mary, for the period April through July, are forecast to be 7 percent above average and 28 percent above last years forecasts. Streamflow in the Milk, for the period April through July, are forecast to be 3 percent above average and 71 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +1.6 in the Milk River.

## Streamflow Forecasts

| Forecast Pt<br>Forecast<br>Period   | <--- Drier --- Future Conditions --- Wetter ---> |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |     |
|-------------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|-----|
|                                     | Chance of Exceeding *                            |                 |                                      |                 |                 |                       |     |
|                                     | 90%<br>(1000AF)                                  | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |     |
| SWIFTCURRENT CREEK at Sherburne (2) |  |                 |                                      |                 |                 |                       |     |
| APR-JUL                             | 96   | 104             | 110                                  | 103             | 116             | 124                   | 107 |
| APR-SEP                             | 109  | 119             | 125                                  | 100             | 131             | 141                   | 125 |
| ST. MARY RIVER near Babb            |  |                 |                                      |                 |                 |                       |     |
| APR-JUL                             | 370  | 400             | 420                                  | 106             | 440             | 470                   | 395 |
| APR-SEP                             | 429  | 465             | 490                                  | 106             | 515             | 551                   | 463 |
| ST. MARY RIVER at US/CAN Border (2) |  |                 |                                      |                 |                 |                       |     |
| APR-JUL                             | 431  | 475             | 505                                  | 109             | 535             | 579                   | 462 |
| APR-SEP                             | 502  | 551             | 585                                  | 109             | 619             | 668                   | 539 |
| MILK RIVER at Western Crossing      |  |                 |                                      |                 |                 |                       |     |
| APR-JUL                             | 30   | 38              | 43                                   | 116             | 48              | 56                    | 37  |
| APR-SEP                             | 32   | 40              | 45                                   | 115             | 50              | 58                    | 39  |
| MILK RIVER at Eastern Crossing (2)  |  |                 |                                      |                 |                 |                       |     |
| APR-JUL                             | 28   | 44              | 55                                   | 95              | 66              | 82                    | 58  |
| APR-SEP                             | 39   | 54              | 64                                   | 96              | 74              | 89                    | 67  |

# Streamflow Forecasts

|                         | <--- Drier --- Future Conditions --- Wetter ---> |          |                   |          |          |           |
|-------------------------|--|----------|-------------------|----------|----------|-----------|
| Forecast Pt             | ----- Chance of Exceeding * -----                |          |                   |          |          |           |
| Forecast                | 90%  | 70%      | 50% (Most Prob)   | 30%      | 10%      | 30 Yr Avg |
| Period                  | (1000AF)   | (1000AF) | (1000AF) (% AVG.) | (1000AF) | (1000AF) | (1000AF)  |
| BEAVER CREEK near Havre |  |          |                   |          |          |           |
| APR-JUL                 | 2.41   | 6.51     | 9.30              | 98       | 12.09    | 16.19     |
|                         |  |          |                   |          |          | 9.50      |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

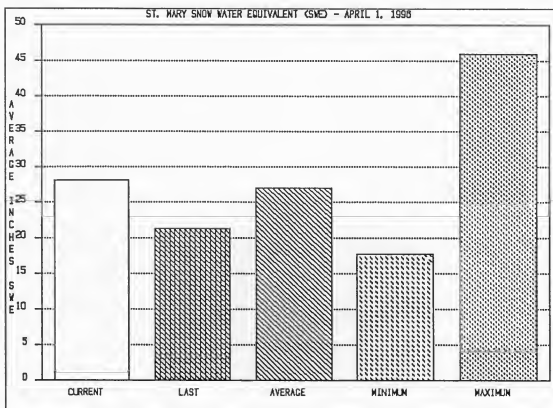
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

## Reservoir Storage (1000AF) End of March

| Reservoir      | Usable<br>Capacity | *****<br>This Year | Usable Storage<br>Last Year | *****<br>Average |
|----------------|--------------------|--------------------|-----------------------------|------------------|
|                |                    |                    |                             |                  |
| LAKE SHERBURNE | 64.3               | 39.1               | 25.4                        | 24.8             |
| FRESNO         | 127.0              | 103.6              | 58.8                        | 77.1             |
| BEAVER CREEK   | 3.5                | 2.8                | 2.8                         | 2.2              |
| NELSON         | 66.8               | 32.2               | 21.8                        | 36.5             |

## Watershed Snowpack Analysis

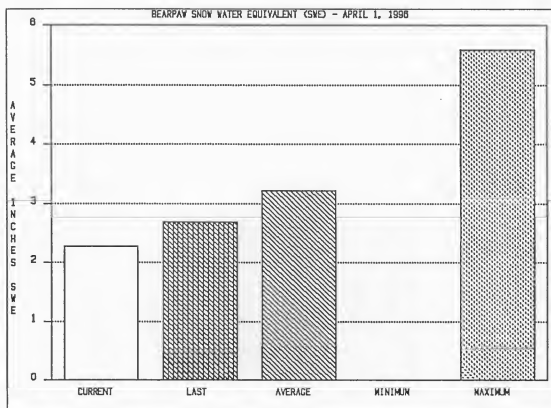
| Watershed                | Number of<br>Data Sites | This Year as Percent of<br>Last Year      Average |     |
|--------------------------|-------------------------|---|-----|
|                          |                         |   |     |
| ST. MARY RIVER BASIN     | 3                       | 132   | 104 |
| BEARPAW MOUNTAINS        | 5                       | 84  | 71  |
| CYPRESS HILLS, CANADA    | 0                       | 0   | 0   |
| MILK RIVER BASIN         | 5                       | 84  | 71  |
| ST. MARY and MILK BASINS | 8                       | 124   | 98  |



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1992.



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1973-1995, OCCURRED IN WATER YEAR 1983.

MAXIMUM SNOW WATER EQUIVALENT, 1973-1995, OCCURRED IN WATER YEAR 1975.

## UPPER YELLOWSTONE RIVER BASIN as of April 1, 1996

Snowpack conditions in the Upper Yellowstone River Basin were above average. Snow water content was 25 percent above average; 32 percent above last year; and decreased 4 percent during March. The following data sites are at or near record highs: Beartooth Lake was second highest in 36 years; Box Canyon has set a new record in 17 years with 15.2 inches snow water exceeding the 13.6 inches snow water in 1982; Canyon has set a new record in 57 years with 21.6 inches snow water exceeding the 21.2 inches snow water in 1965; Fisher Creek was sixth highest in 35 years; Northeast Entrance was fourth highest in 59 years; White Mill was second highest in 35 years; Wolverine set a new record in 16 years with 18.2 inches snow water exceeding the 14.9 inches snow water in 1982; Parker Peak set a new record in 15 years with 27.7 inches snow water exceeding the 26.2 in 1982; and Evening Star has set a new record in 14 years with 41.3 inches snow water exceeding the 40.6 inches snow water in 1986.

Mountain precipitation during March was 20 percent above average and 1 percent below last year. Valley precipitation during March was 26 percent above average and 15 percent below last year. Water year precipitation, beginning October 1, 1995, was 32 percent above average and 21 percent above last year.

Reservoir storage, on the last day of March, was 2 percent below average and 23 percent below last year. Mystic Lake storage was 87 percent below average and 78 percent below last year and Cooney storage was 14 percent above average and 19 percent below last year.

Streamflows, for the period April through July, are forecast to be 31 percent above average and 32 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +3.0 in the Yellowstone River above Bighorn River; +3.4 in the Yellowstone River above Livingston; +0.9 in the Shields River; +1.5 in the Boulder River; +1.8 in the Stillwater River; +3.0 in the Rock/Red Lodge Creeks; and +3.3 in the Clarks Fork River.

## Streamflow Forecasts

|                                     | <--- Drier --- Future Conditions --- Wetter ---> |          |                   |          |          |           |      |
|-------------------------------------|--|----------|-------------------|----------|----------|-----------|------|
| Forecast Pt                         | Chance of Exceeding *                            |          |                   |          |          |           |      |
| Forecast                            | 90%  | 70%      | 50% (Most Prob)   | 30%      | 10%      | 30 Yr Avg |      |
| Period                              | (1000AF)   | (1000AF) | (1000AF) (% AVG.) | (1000AF) | (1000AF) | (1000AF)  |      |
| YELLOWSTONE at Lake Outlet          |  |          |                   |          |          |           |      |
| APR-JUL                             | 565  | 622      | 660               | 115      | 698      | 755       | 573  |
| APR-SEP                             | 786  | 860      | 910               | 115      | 960      | 1034      | 792  |
| YELLOWSTONE RIVER at Corwin Springs |  |          |                   |          |          |           |      |
| APR-JUL                             | 1786   | 1881     | 1945              | 121      | 2009     | 2104      | 1609 |
| APR-SEP                             | 2106   | 2233     | 2320              | 120      | 2407     | 2534      | 1937 |
| YELLOWSTONE RIVER near Livingston   |  |          |                   |          |          |           |      |
| APR-JUL                             | 2061   | 2179     | 2260              | 122      | 2341     | 2459      | 1855 |
| APR-SEP                             | 2456   | 2601     | 2700              | 121      | 2799     | 2944      | 2241 |
| SHIELDS RIVER near Livingston       |  |          |                   |          |          |           |      |
| APR-JUL                             | 129  | 153      | 170               | 105      | 187      | 211       | 162  |
| APR-SEP                             | 146  | 171      | 188               | 105      | 205      | 230       | 179  |

Streamflow Forecasts (continued)

| Forecast Pt<br>Forecast<br>Period  | ← Drier — Future Conditions — Wetter → |                 |                                      |                 |                 | 30 Yr Avg<br>(1000AF) |      |
|------------------------------------|--|-----------------|--------------------------------------|-----------------|-----------------|-----------------------|------|
|                                    | Chance of Exceeding *                  |                 |                                      |                 |                 |                       |      |
|                                    | 90%<br>(1000AF)                        | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30%<br>(1000AF) | 10%<br>(1000AF) |                       |      |
| BOULDER RIVER at Big Timber        |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                            | 246                                    | 287             | 315                                  | 94              | 343             | 384                   | 335  |
| APR-SEP                            | 270                                    | 312             | 340                                  | 93              | 368             | 410                   | 364  |
| WEST ROSEBUD CREEK near Roscoe (2) |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                            | 67                                     | 73              | 77                                   | 126             | 81              | 87                    | 61   |
| APR-SEP                            | 88                                     | 95              | 100                                  | 127             | 105             | 112                   | 79   |
| STILLWATER RIVER nr Absarokee (2)  |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                            | 516                                    | 584             | 630                                  | 127             | 676             | 744                   | 498  |
| APR-SEP                            | 641                                    | 706             | 750                                  | 127             | 794             | 859                   | 593  |
| CLARKS FORK RIVER near Belfry      |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                            | 625                                    | 679             | 715                                  | 134             | 751             | 805                   | 532  |
| APR-SEP                            | 690                                    | 749             | 790                                  | 134             | 831             | 890                   | 590  |
| RED LODGE CREEK blw Cooney Res (2) |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                            | 39                                     | 54              | 65                                   | 138             | 76              | 91                    | 47   |
| APR-SEP                            | 54                                     | 70              | 80                                   | 140             | 91              | 106                   | 57   |
| YELLOWSTONE RIVER at Billings (2)  |  |                 |                                      |                 |                 |                       |      |
| APR-JUL                            | 3796                                   | 4239            | 4540                                 | 127             | 4841            | 5284                  | 3577 |
| APR-SEP                            | 4801                                   | 5034            | 5360                                 | 127             | 5686            | 5938                  | 4211 |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

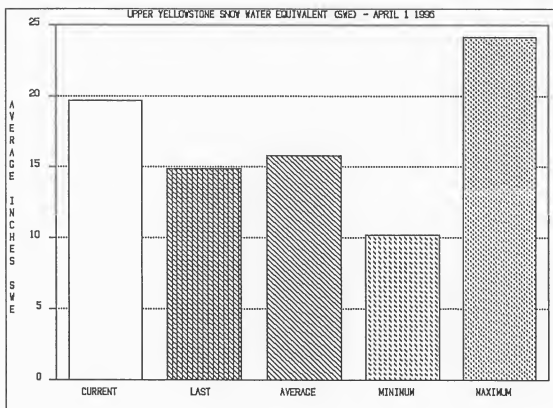
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of March

| Reservoir   | Usable<br>Capacity | *****<br>This Year | Usable Storage<br>Last Year | *****<br>Average |
|-------------|--------------------|--------------------|-----------------------------|------------------|
| MYSTIC LAKE | 21.0               | 0.4                | 1.8                         | 3.1              |
| COONEY      | 27.4               | 19.2               | 23.8                        | 16.9             |

# Watershed Snowpack Analysis

| Watershed                 | Number of<br>Data Sites | This Year as Percent of<br>Last Year | Percent of<br>Average |
|---------------------------|-------------------------|--------------------------------------|-----------------------|
| YELLOWSTONE ab LIVINGSTON | 16                      | 129                                  | 132                   |
| SHIELDS                   | 7                       | 105                                  | 99                    |
| BOULDER-STILLWATER        | 7                       | 165                                  | 118                   |
| CLARK'S FORK-ROCK CREEK   | 13                      | 139                                  | 136                   |
| UPPER YELLOWSTONE BASIN   | 39                      | 132                                  | 125                   |



AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1981.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1971.



LOWER YELLOWSTONE RIVER BASIN as of April 1, 1996

Snowpack conditions in the Lower Yellowstone River Basin were above average. Snow water content was 20 percent above average; 23 percent above last year; and increased 2 percent during March. Several data sites in the basin headwaters have set or are near record high snowpack.

Mountain and valley precipitation during March was 31 percent above average and 18 percent below last year. Water year precipitation, beginning October 1, 1995, was 24 percent above average and 2 percent above last year.

Reservoir storage, on the last day of March, was 1 percent below average and 1 percent below last year. Bighorn Lake storage was 2 percent below average and 2 percent below last year and Tongue River was 11 percent above average and 21 percent above last year.

Streamflows, for the period April through July, are forecast to be 32 percent above average and 31 percent above last years forecasts.

Surface Water Supply Index (SWSI) was +2.8 in the Yellowstone River below Bighorn River; +2.1 in the Bighorn River below Bighorn Lake; +0.9 in the Little Bighorn River; +0.9 in the Tongue River; and +0.3 in the Powder River.

Streamflow Forecasts

|                                      | <--- Drier ---        |                 | Future Conditions                    |     | --- Wetter ---> |      |                       |
|--------------------------------------|-----------------------|-----------------|--------------------------------------|-----|-----------------|------|-----------------------|
| Forecast Pt<br>Forecast<br>Period    | Chance of Exceeding * |                 |                                      |     |                 |      | 30 Yr Avg<br>(1000AF) |
|                                      | 90%<br>(1000AF)       | 70%<br>(1000AF) | 50% (Most Prob)<br>(1000AF) (% AVG.) | 30% | 10%             |      |                       |
| YELLOWSTONE RIVER at Billings (2)    |                       |                 |                                      |     |                 |      |                       |
| APR-JUL                              | 3796                  | 4239            | 4540                                 | 127 | 4841            | 5284 | 3577                  |
| APR-SEP                              | 4801                  | 5034            | 5360                                 | 127 | 5686            | 5938 | 4211                  |
| BIGHORN RIVER nr St. Xavier (2)      |                       |                 |                                      |     |                 |      |                       |
| APR-JUL                              | 1748                  | 2011            | 2190                                 | 133 | 2369            | 2632 | 1645                  |
| APR-SEP                              | 2046                  | 2316            | 2500                                 | 139 | 2684            | 2954 | 1794                  |
| LITTLE BIGHORN RIVER nr Hardin       |                       |                 |                                      |     |                 |      |                       |
| APR-JUL                              | 68                    | 108             | 135                                  | 96  | 162             | 202  | 140                   |
| APR-SEP                              | 73                    | 119             | 150                                  | 96  | 181             | 227  | 157                   |
| TONGUE RIVER stateline nr Decker (2) |                       |                 |                                      |     |                 |      |                       |
| APR-JUL                              | 161                   | 205             | 235                                  | 102 | 265             | 309  | 230                   |
| APR-SEP                              | 183                   | 229             | 260                                  | 102 | 291             | 337  | 256                   |
| YELLOWSTONE RIVER at Miles City (2)  |                       |                 |                                      |     |                 |      |                       |
| APR-JUL                              | 5695                  | 6508            | 7060                                 | 130 | 7612            | 8425 | 5431                  |
| APR-SEP                              | 6972                  | 7677            | 8260                                 | 132 | 8843            | 9547 | 6281                  |
| POWDER RIVER at Moorhead             |                       |                 |                                      |     |                 |      |                       |
| APR-JUL                              | 93                    | 142             | 175                                  | 83  | 208             | 257  | 211                   |
| APR-SEP                              | 115                   | 160             | 190                                  | 82  | 220             | 265  | 232                   |

# Streamflow Forecasts

|             |  |          |                   |          |          |           |
|-------------|--|----------|-------------------|----------|----------|-----------|
|             | <--- Drier --- Future Conditions --- Wetter ---> |          |                   |          |          |           |
| Forecast Pt | Chance of Exceeding *                            |          |                   |          |          |           |
| Forecast    | 90%  | 70%      | 50% (Most Prob)   | 30%      | 10%      | 30 Yr Avg |
| Period      | (1000AF)   | (1000AF) | (1000AF) (% AVG.) | (1000AF) | (1000AF) | (1000AF)  |

## POWDER RIVER near Locate

|         |     |     |     |    |     |     |     |
|---------|-----|-----|-----|----|-----|-----|-----|
| APR-JUL | 134 | 188 | 225 | 89 | 262 | 316 | 252 |
| APR-SEP | 138 | 202 | 245 | 89 | 288 | 352 | 276 |

## YELLOWSTONE RIVER nr Sidney (2)

|         |      |      |      |     |      |       |      |
|---------|------|------|------|-----|------|-------|------|
| APR-JUL | 6333 | 7430 | 8175 | 138 | 8920 | 10017 | 5925 |
| APR-SEP | 7700 | 8152 | 9000 | 132 | 9848 | 11107 | 6814 |

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

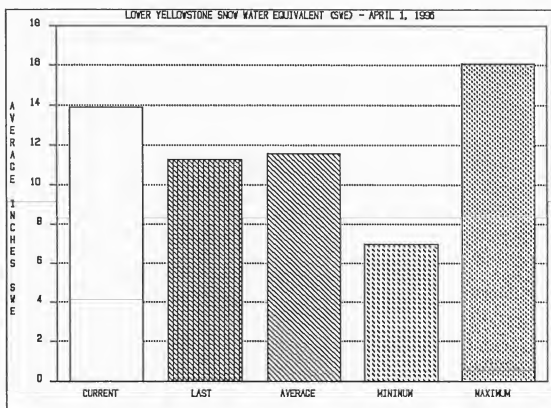
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

## Reservoir Storage (1000AF) End of March

| Reservoir    | Usable<br>Capacity | ***** Usable Storage ***** |           |         |
|--------------|--------------------|----------------------------|-----------|---------|
|              |                    | This Year                  | Last Year | Average |
| BIGHORN LAKE | 1356.0             | 783.3                      | 798.0     | 798.5   |
| TONGUE RIVER | 68.0               | 40.0                       | 33.1      | 36.1    |

## Watershed Snowpack Analysis

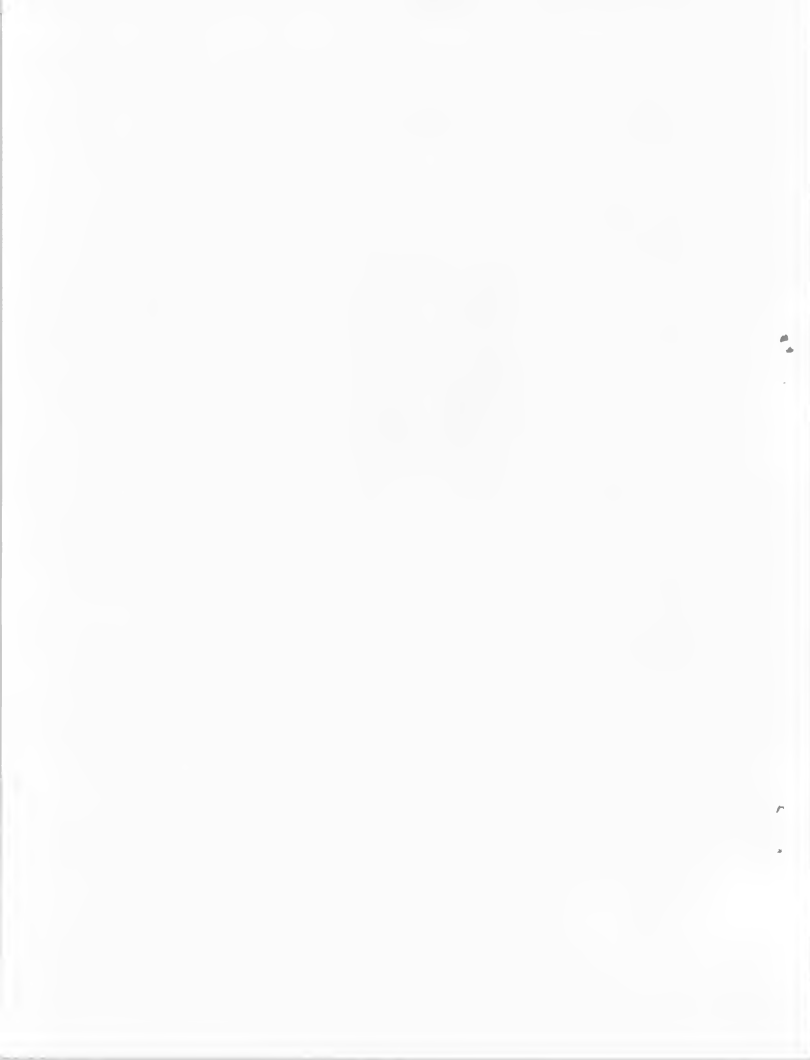
| Watershed                | Number of<br>Data Sites | This Year as Percent of |         |
|--------------------------|-------------------------|-------------------------|---------|
|                          |                         | Last Year               | Average |
| WIND RIVER (Wyoming)     | 20                      | 124                     | 120     |
| SHOSHONE RIVER (Wyoming) | 6                       | 139                     | 153     |
| BIGHORN RIVER (Wyoming)  | 20                      | 124                     | 126     |
| LITTLE BIGHORN (WYOMING) | 3                       | 126                     | 105     |
| TONGUE RIVER (Wyoming)   | 9                       | 125                     | 112     |
| POWDER RIVER (Wyoming)   | 9                       | 106                     | 107     |
| LOWER YELLOWSTONE BASIN  | 48                      | 123                     | 120     |

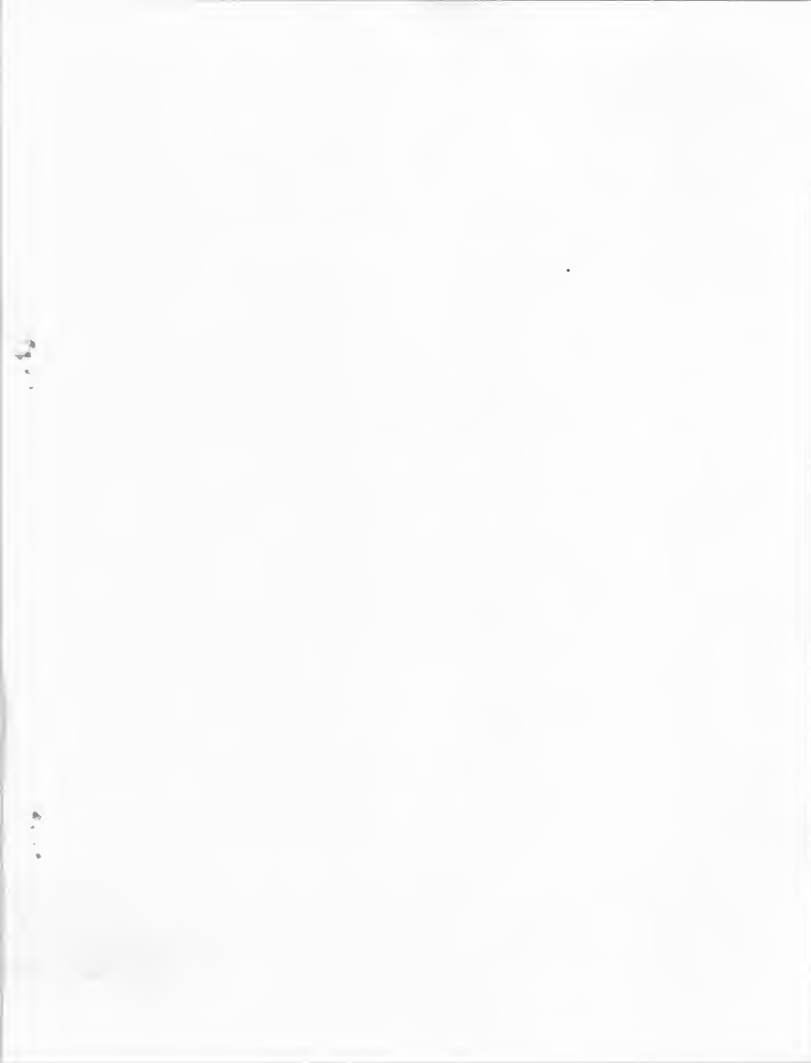


AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1966.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1971.







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**Montana**  
**Basin Outlook Report**  
Natural Resources Conservation Service  
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